# TEXTILE TECHNOLOGY DIGEST

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## Abstracts

*(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)*



### FIBERS A

**Composite pipe.** Jos. F. Stephens (to Gustin-Bacon Mfg. Co.). USP 2 467 999, Apr. 19, 1949.

A fiber reinforced composite pipe consists of long reinforcing fibers helically wound in superposed layers to form the peripheral shell of the pipe. The fiber layers are bonded with a cured plastic material. Glass fibers, asbestos fibers, hair, vegetable fibers, or their mixtures may be used as the reinforcing fibers.

FIBRE SCIENCE. Ed. by J. M. Preston. Manchester, The Textile Institute, 1949. 341 p.; Price: 30s.

This volume provides a composite but inter-related picture of the constitutional, structural and reactional aspects of fiber technology. It attempts to organize and disseminate knowledge of the relation of scientific theory to technology and industrial practice. . . . In the hope of bringing . . . new knowledge to the attention of a wider range of students and technologists, The Manchester College of Technology in conjunction with the Regional Advisory Council for Technical Education enlisted the services of some leading British scientists, who were concerned wth the explanation of the constitution and structure of the principal textile fibers, and of the nature of the changes they undergo in processing, in a series of lectures, organized by J. M. Preston.—*Can. Textile J.*

### Natural fibers A 1

**Application of statistics to the measurement of fibers.** R. C. Palmer, Wool Industries Research Assn., Leeds, England. *L'Ingenieur Textile 370*, 17-36 (Oct., Nov., 1948); *in French*.

The properties considered are: fineness, length, contour (ellipticity), curl, friction, elasticity, strength, and orientation. Methods of expressing the distribution and relationships between the



methods are discussed. The methods of sampling fibers are explained in detail. There are 12 references.

**Architecture of wool fibers.** A. F. Barker. *Textile Mfr. 74*, 588-92 (Dec. 1948); *75*, 40, 41, 42 (Jan. 1949); 55-9 (Feb. 1949); 173-4 (Apr. 1949).

These further articles of the series are concerned with the fibril structure of wool fiber, the medulla and medullated wools and hairs. It is shown that there are 2 distinct wool fiber substances and probably 3, possibly corresponding with the 3 blood types. (See also TTD: *6*, 97).

**How to prevent sticking in the treatment of vegetable fibers by wet methods.** Louis Henry. *L'Industrie Textile 64*, 96 (May, 1947); *in French.*

In the production of fibers from hemp, jute, linen, coconut, etc. sticking can be prevented by soaking the fibers, at the end of the wet treatment, in an alkaline liquid containing phosphate, ammonia, or both, and hydrogen peroxide or substances which form hydrogen peroxide, and a softening agent. The fibers are then dried without rinsing. The amount of peroxide used is small, but there is a slight bleaching effect.

**Machine for scutching sheets of fibers.** Dirk Barth. French P. 930 173, July 28, 1947 (through *Bull. de L'Institut Textile*).

The machine consists of a drum covered with cutting blades which can be adjusted. These strike against a layer of the fibers supported on grooved surfaces, consisting of rollers, alternately provided with grooves, in which guides direct the layer of fibers toward the following roller. At the discharge end of this unit, there is a similar machine provided with grooves in which the scutching blades pass.

**Machine for treating bark fibers and for extracting cellulose.** C. C. A. Roches. French P. 930

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160, July 28, 1947 (through *Bull. de L'Institut Textile*).

This is a purely mechanical method of elimination for removing ligneous material from bast fibers such as ramie, linen, hemp, etc., without cutting the fibers, and keeping them parallel. Two types of machines are used. One consists of a number of parallel plates which move up and down. The plates are grooved and they strike against a grill with a high frequency. In the other machine, the plates are replaced with grooved disks and the ridges between the grooves are inserted in the space between the bars of a grill.

**Process for separating fibers from flax.** R. G. Dietsch. French P. 928 066, May 19, 1949.

The biological retting of flax is effectively controlled by treating it first with a solution of a weak acid (sulfurous acid, for example) and then with a very dilute alkaline solution (caustic soda). These solutions are maintained at 80°C or above for several hours. This process permits the control of the different factors affecting the reaction: temperature, duration, quantity of flax, concentration of the acid and alkaline solutions, etc.

**Repeatability and tolerances of laboratory spinning techniques.** Ruby E. Stewart, Chicopee Mfr. Corp. & L. E. Parsons, Texas Tech. College. *Textile Research J. 19,* 283-87 (May, 1949).

Two series of pilot-plant spinning tests, each repeated several times on the same cotton mix, showed good repeatability of: (1) waste losses at the opening, picking, and carding process; (2) nep counts in the card web; (3) yarn strength and yarn appearance; (4) end-breakage figures for 30s warp yarn after spinning frames were thoroughly broken-in. Approximately 5,000 spindle hrs. are required for an accurate and significant test on 30s warp yarn. The 2 series of experiments indicate that properly conducted spinning tests can be made on different cottons and the results compared directly.

COTTON IN NON-WOVEN FABRICS. Frank A. McCord & Raymond Steinbach, Jr. Memphis Tenn., Natl. Cotton Council of Am., 1949. 15 p.

This report follows the pattern established in previous reports concerned with cotton's position in specific market outlets. The information given is a summary of the opinions and suggestions of representatives of non-woven fabric manufacturers and of suppliers who provide them with either goods or services. Pressed felts, waddings, and other types of non-woven materials not held together by a bonding agent are not considered. Subjects covered include: 1) The industry—its machinery and processing methods; 2) uses for non-woven fabrics; 3) quality comparisons between non-woven fabrics and competing materials; 4) cotton's quality advantages; 5) research opportunities for cotton; 6) merchandising problems; and 7) price relationship.





## Artificial fibers A 2

**Apparatus and method of dry spinning vinyl compounds.** Antoine F. G. Mouchiroud & Jos. A. Trillat (to Societe Rhodiaceta). USP 2 472 842, June 14, 1949.

This invention provides a process for manufacturing filaments and the like wherein a solution of vinyl polymers in a volatile solvent is extruded into an evaporative atmosphere which is moving at substantially the same speed and in the same direction as the filaments and thereafter condensing the solvent vapor.

**Apparatus and process for making filaments.** Edw. E. Lovig. USP 2 470 039, May 10, 1949.

This invention provides a process for making a kinky filament wherein the cellulose strand is partially gelatinized by $H_2SO_4$, rinsed free of the acid, immersed in a sodium silicate bath until it has acquired a sodium silicate film, curling, corrugating and baking to permanently kink the coated strand.

**Aqueous dispersions of synthetic linear polyamide and process for obtaining same.** Theodore Le Sueur Cairns (to E. I. du Pont de Nemours & Co.). USP 2 467 186, Apr. 12, 1949.

Aqueous dispersions of a synthetic linear polyamide can be made by milling water gradually at a temperature below 100°C into the polyamide in contact with a water-soluble organic dispersing agent and continuing the milling until a polyamide-in-water dispersion is formed. The polyamide has a unit length of at least 7 and an average number of C atoms of at least 2 separating the amide groups. The polyamide is selected from the group consisting of N-substituted polyamides and interpolyamides. Films prepared according to this invention are useful for coating surfaces such as cloth, leather, wood, metal, etc.

**Celanese introduces new chemical staple fiber.** Anon. *Rayon & Syn. Tex. 30,* 40 (June, 1949).

*Celcos,* a new chemical staple fiber in the rayon group, was recently announced by the Celanese Corp. of Am. The new yarn contains and retains

the desirable qualities of both acetate and viscose fibers. *Celcos* is produced and crimped in predetermined filament sizes and lengths and in both bright and dull lusters; it is more moisture absorbent than acetate rayon staple and less moisture absorbent than viscose rayon staple. Other features of the new fiber include excellent dyeing qualities, an affinity for resins, and excellent blending qualities. *Celcos* can be processed into yarns on standard types of carding and spinning machinery.

**Dissolving apparatus for the preparation of cellulose solutions.** Arie van Halewijn (to Am. Enka Corp.). USP 2 466 649, Apr. 5, 1949.

An apparatus for dissolving cellulose in a solution of alkali metal zincate and stannate solutions is claimed. It comprises a vertical shell having an inlet and outlet port for the passage of cooling material. A tube of small diameter, open at each end, passes vertically through the shell with an agitator shaft to which is attached groups of agitator vanes passing centrally through the tube. The vanes are so placed that there is a vane in each horizontal plane. A pump of the postive displacement type is attached at the lower end of the tube to move the material in the tube at a predetermined uniform speed.

**Hardening protein filaments.** Imperial Chemical Industries Ltd. Australian P. 132 011, June 24, 1946.

Coagulated filaments of globulins or phosphoproteins are treated in a formaldehyde bath saturated with sodium chloride and sodium (or magnesium) sulfate at a pH of 4-6 and at less than 60°C, and then at a raised temperature in a formaldehyde bath acidified strongly with sulfuric acid and saturated with sodium or magnesium sulfate.

**Manufacture of artificial products.** Richard R. Sitzler & Jos. E. Bludworth (to Camille Dreyfus). Can. P. 447 063, Mar. 2, 1948.

In a process for the treatment of filamentary materials having a basis of an organic substitution derivative of cellulose to make said filamentary materials more amenable to creping, delustering and dyeing operations, the step of incorporating uniformly throughout the mass of the filamentary materials a polymerized ethylene oxide having a consistency from a syrupy liquid to a solid, in an amount equal to from 1 to 50% based on the weight of the organic substitution derivative of cellulose present in said filamentary materials.

**Manufacture of hydroxyl alkyl cellulose.** Donald R. Erickson. USP 2 469 764, May 10, 1949.





In the process of producing hydroxy ethyl cellulose in which cellulose is reacted with sodium hydroxide and the resulting alkali cellulose is reacted with gaseous ethylene oxide, the steps of creating dry flocked cellulose fibers for reaction with the sodium hydroxide by flocking dry cellulose.

**Method and apparatus for spinning artificial fibers.** Wesley L. Webb & Howard D. Merion (to Am. Viscose Corp.). USP 2 465 408, Mar. 29, 1949.

A method of spinning artificial fibers comprises extruding viscose to form a multiplicity of filaments, using a spinneret having less than 1200 orifices arranged in circular rows and spaced apart by a distance of the order of 0.010 of an inch and at the most not over 0.015 of an inch. The filaments flow into an equeous acid coagulating medium as a compact bundle and are then stretched while still in plastic condition by at least 40%.

**Method of and apparatus for liquid treatment of yarns.** Wm. H. Furness (to Am. Viscose Corp.). USP 2 470 299, May 17, 1949.

In apparatus for the liquid treatment of yarn, the combination of a reel on which the yarn is laid up in a helic, a liquid compartment mounted adjacent to the reel and means for pulsating the liquid in the compartment back and forth through the perforate face into and out of the helix.

**Method of preparing regenerated cellulose.** Gordon D. Hiatt & Carleton L. Crane (to Eastman Kodak Co.). USP 2 473 473, June 14, 1949.

A method of preparing regenerated cellulose comprises mixing together at a temperature not to exceed 37°F cellulose having a viscosity not to exceed 200 centipoises, $N_2O_4$, an inert solvent compatible with $N_2O_4$ containing between 0.5 and 20% of water, and 0.5-20% of water, based on the weight of the $N_2O_4$, until solution of the cellulose occurs, followed by imparting a physical form to the solution and setting the so-formed solution.

**Multiple stage thread advancing drier reel.** Thos. S. Mayner (to Industrial Rayon Corp.). USP 2 465 386, Mar. 29, 1949.

A thread advancing reel is provided on which at least 2 processing stages can be performed, one being the step of drying. The reel comprises a reel member having a periphery of a plurality of longitudinally extending bar members, a heating means positioned in the reel member, and a plurality of reel members having peripheries of pluralities of bar members in an end-to-end relation and which interdigitate with the bar members of the

first reel member. The overall length of the plurality of reel members is substantially equal to that of the first reel member bars. The bar members cooperate to advance thread over the reel in a plurality of generally helical turns.

**New synthetic fibers.** G. Preston Hoff, E. I. du Pont de Nemours & Co., Inc. *Am. Dyestuff Reptr. 38*, 459-60, 479-80 (June 13, 1949).

This is a review of all synthetic fibers except the glass fibers and the protein-base fibers. The development of Orlon is noted briefly and the research involved in developing a new fiber is considered.

**Owens-Corning Fiberglas Corp.** Anon. *Textile Age 13*, 95-102 (May, 1949).

The history of Fiberglas, its manufacture, processing, properties, and uses are discussed.

**Procedure and apparatus for producing a synthetic fabric resembling wool.** Cuprum S. A. French P. 929 342, July 7, 1947. (through *Bull. de L'Institut Textile*).

Untwisted rayon filaments are passed into an impregnating bath containing a solution which favors the fixing of ulterior curling. They are then passed into a drying chamber where they are given a false twist. While this twist is unwinding, the filament passes to a winding machine. This process has been improved by placing between the first driving mechanism and the drying tunnel, a complementary twister turning in the direction opposite to the other twister. Rayon is thus converted into a curled filament, resembling wool, in a single operation.

**Process for stretching cellulose acetate filaments.** Percy F. C. Sowter (to Celanese Corp. of Am.). USP 2 473 615, June 21, 1949.

A process for reducing the denier without substantially affecting the tenacity and extensibility of artificial filaments having a basis of an acetone soluble cellulose acetate and having an extensibility of at least 20%, comprises softening the filaments by means of a mixture containing acetone and benzene at 20 to 25°C. until they become capable of being stretched to at least twice their original length by a tension of 0.1 to 0.5 gms/100 den., washing the stretched filaments with benzene and drying them, and allowing them to shrink during at least part of the washing and drying operation.

**Process for preparation of stable, non-swelling solutions of cellulose and products formed from this solution.** Heberlein & Co., A. G. French P. 933 336, Dec. 17, 1947. (through *Bull. de L'Institut Textile*).



The cellulose is placed in a solution containing at least 20% of soda and dissolved zinc oxide in the presence of small amounts of substances of the general formula: Halogen-$CH_2$-R, in which R is a carboxyl, alkylcarboxyl, aldehyde, alkylcarbonyl, hydroxyalkyl, alkoxy, or alkalene oxide. No refrigeration is required. The solutions of cellulose are quite homogeneous and do not gel; they are more suitable for the impregnation of textiles than other solutions used in known processes, most of which have a very high viscosity. As raw materials, wood pulp, cotton linters, and scraps of viscose rayon may be used. The simplicity and the ease with which the solution can be prepared are the chief advantages of the process.

**Processing continuous filament synthetic fibers.** Robt. A. Hargreaves, Whitin Machine Works. *Rayon & Syn. Tex. 30*, 75-7 (June, 1949).

This is a discussion of Whitin's contribution to the development of machinery for processing continuous filaments. The 4-spindle group type drive is diagrammed and its mechanism discussed.

**Production of slivers of artificial fibers.** Wm. G. Abbott, Jr. USP 2 473 499, June 21, 1949.

This invention provides a method for the production of slivers of artificial fibers wherein 2 filament forming immiscible materials are alternately forced through the orifices so the resulting material is a mixture of the 2 filaments in staple form.

**Production of viscous aqueous alkaline solutions of vegetable globulins.** Walter A. Caldwell (to Imperial Chemical Industries Ltd.). USP 2 469 452, May 10, 1949.

This invention provides a process for the manufacture of viscous solutions that exhibit relatively low variability in viscosity between separate batches and relatively low surface gelation propensity. The process comprises including in an unmatured solution of vegetable globulins dissolved in an aqueous solution of alkali metal hydroxide which with time would develop surface gelation, between about 0.5 and 1% of a sulfite ion containing metal sulfites and alkali metal bisulfites and permitting the resulting aqueous alkaline solution to attain a desired viscosity. The matured solution is suitable for the spinning of artificial fibers.

**Rapid ripening of cellulose esters.** Geo. W. Seymour & Anthony J. Bellucci (to Celanese Corp. of Am.). USP 2 470 191, May 17, 1949.

This invention provides for the production of highly stable ripened organic acid esters of cellulose wherein the acid catalyst in the primary cellulose ester solution is neutralized by an alkaline agent. The cellulose ester in the primary solution is ripened and stabilized to a secondary cellulose ester at a temperature of at least 125°C and at a pressure of at least 20 lbs. per sq. in.

**Rapid ripening of cellulose esters.** Geo. W. Seymour, Blanche B. White & Anthony J. Bellucci (to Celanese Corp. of Am.). USP 2 470 192, May 17, 1949.

This invention provides a process wherein a secondary cellulose ester of the desired acyl value is ripened under pressure and at a temperature of at least 125°C in an oxygen-free, inert atmosphere.

**Raw materials, production methods and textile uses of Saran.** A. T. Look. *Can. Textile J. 66,* 46, 48, 50 (May 13, 1949).

Saran, a crystalline material capable of being oriented to form mono-filaments possessing high tensile strength, flexibility, long fatigue life, elasticity, excellent chemical resistance and low water absorption, has many potential applications in the textile industry.

**Self-advancing winding reel.** Rudolph Hellbach (to U. S. of Am.). USP 2 469 767, May 10, 1949.

A cantilever thread advancing reel is provided having the annular cam against which the actuatable bars are urged by springs.

**Study of viscose filament yarn production. Part II: The 2-year pattern; III: The 3½-year and 2¾-year patterns.** E. R. Dewey. *Rayon & Syn. Tex. 30,* 43-4 (May, 1949); 49-51 (June, 1949).

These 2 articles continue the discussion of trends and cycles in the production and consumption of viscose filament yarn. (For Part I see TTD: *6,* 355).

**Treatment of alkali cellulose.** Guillaume M. A. Kayser (to Am. Enka Corp.). USP 2 473 954, June 21, 1949.

A process for delaying the ageing of alkali cellulose comprises ageing alkali cellulose in the presence of about 0.08% of sodium trithiocarbonate, based on the weight of the alkali cellulose.

**Treatment of textile and other materials.** Claude G. Bonard (to Henry Dreyfus). Can. P. 446 918, Feb. 24, 1948.

Process for the treatment of textile and other





materials having a basis of an organic derivative of cellulose containing free hydroxy groups comprises reacting them with a diketene containing 2 ketene radicals by impregnating the materials with a dilute solution of the diketene, evaporating off the solvent at a low temperature and then heating at a temperature between 100 and 120°C.

**Vicara.** Grace R. Wildermuth, Virginia-Carolina Chem. Corp. *Papers Am. Assn. Textile Technologists 4,* 111-16 (June, 1949).

This discussion of Vicara fiber includes the manufacturing process, physical and chemical properties, bleaching, dyeing, and textile processing.

**Vicara—the newest synthetic staple.** W. A. B. Davidson. *Rayon & Syn. Tex. 30,* 73-4 (June, 1949).

Features of Vicara fiber are described. The new fiber overcomes most of the defects of earlier casein fibers; it has improved tenacity, is processed on the cotton system, has a pH of 3, and has strength on a par with wool.

## YARN PRODUCTION B

**Application of statistical methods to the scientific study of spinning and weaving.** J. C. Martindale, Woolen Tech. College, Galashiels. *L'Ingenieur Textile 370,* 113-34 (Oct., Nov., 1948); *in French.*

This subject is discussed under the following headings: raw materials, processes for preparation and for spinning, including carding. Graphs are given which show the variation coefficient for wool yarn plotted against weight per unit length, and 2 which show the variation in weight per unit length of roving and yarn.

**Comments on reducing the number of processes in worsted yarn manufacture.** Anon. *Rayon & Syn. Tex. 30,* 54-6 (May, 1949).

The advantages of the American system for the production of worsted yarn are discussed with respect to the advantages and limitations of the system. It is concluded that the American system is adequate for the production of low and medium count yarns; however, to obtain a fine yarn required for high quality goods, the control of fibers provided by the standard processes is most desirable.

**Process of preparing fibers and yarns.** Ralph E. Montonna, Lloyd H. Reyerson & Elias Amdur (to Regents of the Univ. of Minnesota). USP 2 468 771, May 3, 1949.

Vegetable fibers, such as flax, hemp, ramie, etc.

can be prepared and conditioned for spinning by first decorticating the fibers and forming a roving of them, winding the roving on perforated bobbins, washing with water for about 5 min. at 100°C, rinsing in cool water, and draining. The roving is then treated with a solution of sodium chlorite and acetic acid at about 95°C, rinsed in cold water, treated with a sodium hydroxide solution containing sodium hexametaphosphate at about 95°C, and finally rinsed in cold water. The roving is drafted and spun into yarn while still wet.

**Variable speed unit controls tension and velocity.** Anon. *Textile Industries 113*, 184 (June, 1949).

A sensitive hydraulic controlled variable speed unit is described and illustrated with a diagrammatic sketch. Constant tension and control of velocity of web material can be maintained by this unit in conjunction with a floating roll mechanism. Tension and velocity may be controlled between 2 machines or 2 sections of the same machine.

**Yarn preparation practices described at Georgia meeting.** Anon. *Textile Industries 113*, 121, 125, 129, 131, 133, 225, 227 (June, 1949).

A report on the answers to questions on yarn preparation (drawing, combing, roving, spinning, etc.) discussed at the Spring meeting of the Textile Operating Executives of Georgia is presented.

## Fiber preparation B 1

**Accurate mixing with Fiber Meters.** Anon. *Textile Bull. 75*, 78 (Apr. 1949).

An installation of 3 Fiber Meters at the Marion (N. C.) Mfg. Co. is described briefly. The 3 feeders can handle a total of 1,450 lbs. of stock per hr. at full capacity. In this installation the 3 fiber meters are hooked behind one picker, and deliver individual percentages of the desired mix (which might be 45, 20 and 35 for a total of 100%) simultaneously every 10 secs.

**Process and apparatus for cleaning the card clothing of the carding cylinders of carding machines.** Augustin M. Castell. Can. P. 447 076, Mar. 9, 1948.

Apparatus for cleaning the card clothing of the carding cylinders of carding engines, comprises an electro-aspirator for mounting at the rear part of the carding engine above the cover of the licker-in and in the space between the latter and the curve formed by the flats, which electro-aspirator comprises an electric motor, a casing situated coaxially with the electric motor, an aspirator mounted on the axis in the casing, a tubular element which extends coaxially from the casing to enter a slot therefor in the cover of the carding cylinder, an aspirator mouth-piece at the outer end of the tubular element, and an outlet conduit from the casing so arranged as to discharge and distribute the strippings in front of the feed cylinder, the mouth-piece and outlet forming the ends of a closed passage for continuously returning the strippings during the carding operation to the lap material travelling to the licker-in.



## Carding and combing B 2

**Carding machine attachment.** Rudolph H. von Liedtke (to Gen. Electronic & Mfg. Co. of Am.). USP 2 468 279, Apr. 26, 1949.

This invention provides a machine for crushing the impurities in a web of wool. In operation, the machine is placed between 2 carding machines. By synchronizing the speeds of the various rotating parts relative to one another and to the speed of the rolls and cylinders of the carding machines, the formation of static electricity is broken up to a large extent. Means are also provided for easy access between the carding machines and the crushing machine to permit cleaning; and a magnetic device is provided for removing all metal foreign particles from the web.

**Comb for combing textiles.** Nasmith's Inventions Ltd. French P 933,053, Dec. 17, 1947. (Through *Bull. de L'Institut Textile*).

The free space between the line of nip of the rollers and the line of nip of the conveyor belts (or apron) is reduced to a minimum in a device which consists of an upper conveyor belt which participates in moving the fibers towards the combing cylinder and a lower conveyor belt, the upper face of which can be lengthened or contracted. By making the upper face of the upper conveyor belt sufficiently long, static electricity can be eliminated from the fibers before they leave the face of the conveyor belt.

**Comb for textiles.** Nasmith's Inventions Ltd. French P. 933 054, Dec. 17, 1947. (Through *Bull. de L'Institut Textile*).

In this comb, the upper comb is carried by an arm which has a to-and-fro longitudinal movement, and which inserts the comb in the top. A mechanism is used to vary the point where the arm is released, in the course of its movement toward the rear, in relation to the point where it was lowered

in the preceding cycle. In this way, the upper comb, in each cycle, remains lowered a little longer. A driving arm with an oscillating movement and an arm connected with a lifter arm which forms an inclined plane, and with an alternating motion, independent of the arm carrying the comb, determines the descent of the level of the combing arm, according to the position set by the inclined plane.

**Combs for textiles.** Nasmith's Inventions Ltd. French P. 933 055, Dec. 17, 1947. (Through *Bull. de L'Institut Textile*).

The invention is a simple device which can be adapted to 2 types of the Nasmith comb. It makes possible the variation of the amplitude of the stroke of the upper comb according to the nature of the fiber combed, without interfering with the synchronism of the movements and without changing the position of the comb in relation to the detaching roll.

**New card clothing by Booth Co.** Anon. *Am. Wool Cotton Reptr. 63*, 34 (June 9, 1949).

A new type card clothing is reported to eliminate frequent stripping of the cards due to a waterproof and oilproof plastic face and foundation and due to the height of the teeth which are shorter. The shape of the wire is similar to a torpedo with greater spacing longitudinally and closer transversely. It is claimed that the clothing can be ground and reground and the point of the wire can be rehardened.

**Pneumatic roll picker.** Anon. *Textile Industries 113*, 189 (May, 1949).

A pneumatic roll picker offers a time-saving lint removal method. This roll picker features easily replaced picks in 3 sizes and requires minimum maintenance.

**Present carding methods.** Anon. *Am. Wool Cotton Reptr. 63*, 15, 17 (May 19, 1949); 12-13, 50 (May 26, 1949).

A report on the answers to questions on carding at the Georgia Operating Executives Spring meeting is given in condensed form.

## Drafting and roving B 3

**Air gauging of textiles.** Anon. *Textile Recorder 67*, 79 (May, 1949).

A brief note is given describing the work of the Natl. Physical Lab., D.S.I.R. (England) on the measurement of variations in the fibrous strands of textile materials before spinning. The basic principle of air gauging is the measurement of





pressure variations resulting from changes in resistance to the escape of compressed air from a nozzle, the delivery from the nozzle being controlled by some dimension of the object being measured.

**Device for measuring fiber density of a sliver.** Ernest L. Richardson (to Gen. Electric Co.). USP 2 465 818, Mar. 29, 1949.

A fluid such as air is caused to flow through the fibers of a length of material such as a sliver of which the fiber density is to be determined. The resistance to the flow of air offered by the array of fibers constituting the sliver is a measure of the fiber density, and thus by measuring variations in resistance to the flow of air through the fiber array the amount of variation from uniformity can be determined. (See also USP 2 407 100, TTD: *3*, 444).

**Roll tension device.** John S. Dudley & Carl D. Brandt (to Whitin Machine Works). USP 2 466 806, Apr. 5, 1949.

A tension device for textile machines that have driven bottom drafting rolls and freely rotatable top rolls, such as combers or roving frames, comprises fixed bearing caps between the sets of top rolls, and a separate saddle for applying pressure to each end of each set of top rolls. The saddles are swingable to operative and inoperative positions relative to the top rolls. Tension rods are detachably connected to the saddles and apply pressure through the saddles to the top rolls.

**Slippage of fibers during drafting.** A. D. Karassik (Member of the Ukranian Association for Cultural Relations with Foreign Countries). *L'Industrie Textile 64*, 119-24 (June. 1947).

This is a mathematical treatise.

## Spinning B 4

**Bradford type spinning frame has rising draft yield.** Anon. *Textile Industries 113*, 179 (June, 1949).

A brief note is given on the Bradford type spinning frame that has a 2-stage field to provide higher drafts.

**Device for regulating the tension of yarns in spinning and similar operations.** Christian Christiansen & G. O. K. Rusch. French P. 926 712, Apr. 21, 1947. (through *Bull. de L'Institut Textile*).

The yarn is passed around 2 drums provided with grooves. These drums turn on parallel axes and are connected by gears which drive them at differ-

ent speeds. The yarn slides around one of these drums in the direction opposite to which it turns, and the friction so produced has a braking effect. This braking is uniform and can be regulated by changing the number of turns. It may be varied even while the machine is running.

**Double-twist spindle for spinning, winding, and like textile operations.** Gerard W. Reginald Fane (to Courtaulds Ltd.). USP 2 467 258, Apr. 12, 1949.

A double-twist spindle is described in which the cup is made in one piece and fits tightly on a metal sleeve on the hollow live spindle and is recessed on its lower face to accommodate an annular yarn guide washer of trough-shaped cross-section which can be sprung into the recess. A bobbin carrier is freely mounted on the upper part and a driving whorl secured to the lower part of the spindle with openings from the open center of the spindle to the outside. A weight is secured to the bobbin carrier and the tightly fitting sleeve extends below the bobbin carrier to within the driving whorl with open slots registering with the openings in the whorl to permit yarn passage.

**Heating wool fibers during spinning.** Julien Lebailly. *L'Industrie Textile 64,* 124 (June, 1947); *in French.*

A method of heating the drafting rolls electrically is described. With wool, it is necessary to prevent the rolls from becoming magnetized, and a hair-pin winding of the resistance wire is recommended for this purpose. Low voltages are used to prevent accidents.

**Improvement in machines for spinning linen and similar fibers.** Jas. Mackie & Sons Ltd. French P. 928 529, June 2, 1947. (Through *Bull. de L'Institut Textile*).

Light bobbins made of bakelite, cork, impregnated fiber, etc. and turning on steel shafts permit only a feeble and mediocre variation in the friction. according to the fineness of the yarn. Several models of bobbins are illustrated with bases having diverse profiles and bearing surfaces, according to the friction desired. In some of these, the disk supporting the base of the bobbin or this base itself turns directly on friction washers made of felt, fixed on the bed-plate support; in the other models, the felt washers fixed to the disk turn on the bed plates. The friction can thus be adjusted within wide limits without using sleeve bearings. This is very useful in spinning fine yarns.

**Improvement in spinning and twisting devices using flanges (to hold the bobbin to the spindle).**





Jean Duriez. French P. 928 442, June 2, 1947. (Through *Bull. de L'Institut Textile*).

In spindles with flanges used in spinning, the bobbin is frequently found in contact with the fixed surface of the rail and is entrained by the yarn in a rotary movement which results in wear and breakage of the yarn when the spinning frame is started up. The disadvantages are avoided by interposing between the bobbin and the rail a washer made of compressed fibers or other suitable material. This washer is provided with one or more small strips which fit into longitudinal grooves in the spindle. The washer rotates with the spindle and the bobbin is rotated by friction.

**Machine for spinning short fibers from the waste from wool, cotton or other natural, artificial or synthetic fibers or mixtures thereof.** Fratelli Marzoli & Co. French P. 931 516, Oct. 27. 1947. (Through *Bull. de L'Institut Textile.*)

The roving is drawn from bobbins in a creel and is conducted, by means of a conveyor which moves alternately in a direction traverse to the direction of flow, to a pair of belts which deliver the elastically compressed material to a pair of drawing cylinders. The belts, which may be of the travelling type, distribute the fibers and render the thread more resistant to the drawing action. The drawing can be completed during the passage between the belts, and for this purpose, they can be made of elastic material and can be passed over power-driven guide rollers. The outlet roller is driven at a higher speed than the entrance roller. In this case, the drawing rollers are not used. A uniform draft is obtained which is compatible with the length of the fibers.

**New arrangement of cylinders in machines for spinning carded materials.** Osvaldo Bigatti. French P. 927 539, May 5, 1947. (Through *Bull. de L'Institut Textile*).

The invention is applicable to carding wool, glass fibers, asbestos, etc. Its purpose is to avoid the breakage of the fibers by diminishing the action of the working and stripping cylinders. It consists of a new arrangement of cylinders according to which, in the first pair of cylinders, the stripping cylinder precedes the working cylinder, and, inversely, for all the following couples, the working cylinder precedes the stripping cylinder. Also, the speed of the stripping cylinders is higher than that of the working cylinders, and lower than that of the large drum. The points of the needles of the large drum are turned in the direction of flow, whereas, those of the working cylinders are in the direction opposite to the movement of the material.

**New bobbin features replaceable parts.** Anon. *Textile Industries 113*, 183 (June, 1949).

A new bobbin for use in spinning or twisting is briefly noted.

**New builder cam for warp frames.** Anon. *Textile Industries 113*, 94 (May, 1949).

A new warp builder cam for spinning frames, that permits 4200 yards of yarn to be wound on each bobbin and which will run 7 hrs. before doffing is required, is reported to give savings in labor and increased production. Less piecings are necessary; and the swell at the shoulder of the build is diminished, preventing the yarn from sloughing off.

**New tension pulley eliminates tape slippage.** Anon. *Textile Industries 113*, 177 (June, 1949).

A self-aligning aluminum tension pulley, developed for wool spinning frames, is designed to eliminate tape slippage and frayed selvedges. The pulley requires no cleaning, realigning, or lubrication and helps to maintain more uniform spindle speeds.

**New underframe cleaner.** Anon. *Textile Industries 113*, 87-9 (June, 1949).

An underframe cleaner, cylindrical in shape, is installed underneath the greenboard or deck and immediately above the cylinder on spinning frames. The cleaner prevents the accumulation of lint and "streamers" under the frame by delivering a stream of air which blows the lint onto the floor, where it collects in rolls or balls to be swept up easily. The equipment travels on a single electrified track from one end of the spinning frame to the other.

**Saddle, stirrup and bearing constructions for spinning or roving frames.** Charlton H. Williams. Can. P. 447 212, Mar. 16, 1948.

In spinning, roving and the like frames, this invention provides, in combination with a roll stand, a pressure device comprising a duplex bearing block of lubricant-impregnated wood having a concave rear bearing and a substantially flat intermediate bearing, an adjustible fulcrum on the upper intermediate portion of the block, a saddle having means to overlap the duplex block to reduce relative side motion and pivoted at its rear end portion upon the fulcrum to swing in a substantially vertical plane, means to prevent separation of the duplex block and saddle but permitting relative rocking movement of the saddle with respect to the bearing block, a front porous lubricant-absorbed metal bearing block having a part





cylindrical bearing surface and an internal lubricant cavity, fastening means for entering said cavity and engaging the saddle to hold the bearing block immovably upon the saddle, the fastening means having a lubricant duct communicating with the cavity and weight imposing means contacting the saddle between the front bearing block and the fulcrum.

**Spinning cot.** Enrique L. Luaces (to The Dayton Rubber Co.). USP 2 467 213, Apr. 12, 1949.

The method of making a textile machine unit for drafting fibers comprises mixing a rubbery acrylic nitrile butadiene copolymer with fillers, a vulcanizing agent, and a particulate organic cellular material; molding the resultant mixture to the shape desired; vulcanizing the unit; and exposing the vulcanized unit to a high-frequency electric field where the particulate substance is destroyed throughout the unit, and minute discrete pores filled with gaseous combustion products of the particles are formed. The invention deals particularly with cots for spinning and card room rolls but may also be adapted to temple rolls, loom take up roll coverings, and the like.

**Spinning cot.** Enrique L. Luaces (to The Dayton Rubber Co.). USP 2 467 214, Apr. 12, 1949.

A fiber working unit or cot for spinning machines comprises compounding butadiene styrene copolymer rubber, a vulcanizing agent, and a finely divided magnetic substance; vulcanizing the mixture to a relatively hard, resilient, wear resisting product in which the divided substance is thoroughly dispersed; and drawing the divided substance outwardly through the surface of the unit by magnetic influence. The resulting product has a finely porous texture. The unit is also well adapted for forming temple rolls, loom take-up roll coverings, etc.

**Spinning means and method.** Edw. H. Jackson, Jr. USP 2 454 323, Nov. 23, 1948.

This invention relates to spinning means and methods employed in the manufacture of yarn, twine, rope and other twisted textile strands, made of mixed or unmixed, relatively soft or hard, natural and synthetic fibers. A spinning apparatus is provided having a nipper, smoothing dies, a flier head and means for positively feeding to the nipper a loosely formed sliver ribbon of the proper size to produce a strand of the desired tensile strength, certain novel means between the sliver feeding means and nipper adapted to subject the sliver to a special action during its movement from the one to the other; which means in-

cludes one or more pairs of rollers or drums of novel construction and design, between which the sliver ribbon is moved to effect said action; which rollers are adjustably mounted and arranged to effect said action in a certain manner; and also to provide means of this type which can be advantageously combined with a textile apparatus having a drawing-out arrangement for a mass of fibrous material, so as to automatically subject the mass of loose fiber to the special action indicated, and effect relative positioning of the individual fibers in a certain manner simultaneously with the usual drawing-out action of such a textile apparatus and without disturbing or changing the latter.

## Winding and spooling B 5

**Apparatus for storing bobbins of yarn, etc.** Andre Rey. French P. 926 66, Apr. 21, 1947. (through *Bull. de L'Institut Textile*).

A vertical shaft, resting on a base, is provided with a bracket which turns freely. This comprises a sleeve, on which rods are fixed, the extremities of which are slightly raised so that they will receive bobbins.

**Bobbin-spindle assembly.** Ernest K. Bauer (to Am. Viscose Corp.). USP 2 463 591, Mar. 8, 1949.

This invention provides a bobbin and spindle assembly in which any thread trapped below the bobbin is prevented from effecting axial displacement of the bobbin on the spindle; thread trapped below the bobbin and which rides up on the rotating spindle during or after a doffing operation is forced down on the spindle out of contact with the bobbin when the latter is replaced on the spindle. The bobbin is self-centering on the spindle.

**Micarta lap roll.** Anon. *Textile Age 13*, 83-4 (May, 1949).

A new Micarta lap roll, made of a tough, laminated material that will not chip, dent or splinter, is reported for use on any standard lap winder. The Micarta lap rolls are lighter than rolls now in use, have a more rapid pick-up of lap, and are impervious to moisture.

**New twister builds package permitting over-end delivery.** Anon. *Textile Industries 113*, 155, 159 (May, 1949).

The advantages of the new King-Spool twister are listed. The new twister utilizes a take-up package which is a bobbin with a cone head on a cylindrical tube.

**Resolution into whole numbers of yarn doubling formulaes.** Maurice Philippe. *L'Industrie Textile 64*, 127-8 (June, 1947); *in French.*

A mathematical method is described for determining under what conditions 2 yarns can be twisted together to give a double yarn the twist of which can be expressed by a whole number. It is concluded that it is necessary and sufficient that the quotient of the difference of 2 numbers by their greatest common denominator be a multiple of this G.C.D. or G.C.D. itself.

**Swiss device to reduce spinning breakages.** *Silk & Rayon 23*, 688 (May, 1949).

A description is given of a new Swiss device—the Hegemax system—which reduces spinning breakages by 68% or more.

**Twin disc compensator for extreme yarn speeds.** Anon. *Textile Industries 113*, 166 (June, 1949).

A new twin disc compensator, designed for use on high speed automatic winding machinery, permits high speed winding at constant tension regardless of speed, back drag, or yarn friction.

**Twisting device and method.** Eugene C. Gwaltney (to Saco-Lowell Shops). USP 2 473 521, June 21, 1949.

This invention provides a multiple-twist uptwister with a balloon guide spaced farther from the twister, and having a circular confining guide to neck down the balloon between the twister and the balloon guide.

**Twisting spun yarns on filament ring twisters.** Francis Seawell. *Textile Age 13*, 42-4, 46, 48 (May, 1949).

The Atwood Model-10 ring twister is being used to ply yarns of worsted, spun rayon, and cotton. Adaptation of the twister to these yarns involves the application of builder motions to the twister to produce a tapered top bobbin or a double tapered bobbin. Of the two builder motions, the tapered top bobbin is most frequently used. A discussion of these builders, the stop motion, spindle speeds, tension devices, etc. of the twister is given.

**Two basic systems handle constant yarn winding.** Harold W. Ball. *Am. Wool Cotton Reptr. 63*, 13-14 (June 2, 1949).

The 2 basic classes of winding processes consist of (1) driving the yarn package on the surface, which results in a constant yarn speed and, (2) driving the package from a spindle, which results in variable yarn speed. The open wind machine, the precise wind machine, and the spool wind machine are discussed. Constant speed problems are also discussed.

**Winding machine.** Chas. D. Jencks (to The Werdna Co.). USP 2 466 109, Apr. 5, 1949.

A winding machine for winding yarn, thread, or other filaments at high speeds is claimed. The structure of the winding machine comprises a rotatable spindle for a thread package, a back carrying a thread guide and feeler roll and mounted to swing normally away from the thread package, a dash pot mechanism connected to the back and tending to retard its movement, an electrically operated locking means for holding the back against movement, and a switch operated by the feeler roll on contact with the thread package for releasing the locking means.

**Winding machine.** Robt. H. Lawson (to Werdna Co.). USP 2 466 600, Apr. 5, 1949.

A winding machine for yarn, thread, and other filaments includes a rotary spindle for a thread package, a back carrying a thread guide arranged to cooperate with the spindle, a mechanism for moving apart the spindle and back at a rate in relation to the growth of the package size, and means for pulling thread from a source of supply and supplying it to the thread guide at a uniform tension. Packages of uniform density may be wound at a uniform tension by this machine.

## Yarn processing B 6

**"Fiber Bonded" process.** [C. E. Coke, Courtaulds (Canada) Ltd.]. *Textile Recorder 66*, 61-4 (Mar. 1949).

In a paper read before the first Canadian Textile Seminar, the fiber bonded process developed by Dan River Mills is described and discussed. Features of the machine used in the process are noted briefly and the properties of a number of different types of yarns treated by the process are discussed. The process has been successful when applied to yarns for use in mechanical rubber goods. The fundamental principle of the process is to impregnate the textile fibers with a natural or synthetic resin, place them under tension, and dry and cure while maintaining tension. The fiber bonded process is so recent that many potential end uses of such yarns remain undeveloped.

**Process for improving the tensile strength of grey cotton yarn.** Luther Axford (to U. S. Rubber Co.). USP 2 471 554, May 31, 1949.

The tensile strength of grey cotton yarn may be substantially improved in a simple and commercially attractve manner by contacting the yarn with a hot aqueous solution comprising from 10 to 50% of water, and correspondingly from 90 to 50% of





a saturated monohydric aliphatic alcohol which contains from 3 to 5 C atoms per molecule and which is capable of dissolving water at 75° to 95°C to the extent of at least 10 parts of water per 100 parts by weight of the solution, tensioning the yarn while still hot and wet with the solution, and drying the resulting yarn under tension.

**Process for producing fibrous material and the product.** Georges Heberlein, Georg Heberlein, Ernst Weiss, Theodor Odinga & Karl Risch (to Heberlein Patent Corp.). USP 2 463 618, Mar. 8, 1949.

A process for treating a cellulose yarn to produce a wool effect comprises impregnating the yarn with a substance capable of reacting bifunctionally with hydroxy groups of cellulose and an acid catalyst, supertwisting the fibrous yarn, baking the supertwisted impregnated yarn at about 100°C or above, and then detwisting the cellulosic yarn to produce a wool effect which is substantially fast to washing. The yarn may be impregnated with formaldehyde, an alkylene diethylene urea compound, or a di-isocyanate. The starting material for this process may be regenerated cellulose, staple fiber yarns from regenerated cellulose or native cellulose—e.g., cotton, linen, or cottonized bast fibers, or silk—or mixed twists or mixed spun yarns. The artificial fibrous materials may be impregnated with a setting agent containing a radical selected from the group consisting of methylene and oxymethylene radicals containing groups rendering that agent capable of reacting bi-functionally with the hydroxy groups of cellulose.

**Strand coating and winding machine.** Chas. H. Jones (to Universal Winding Co.). USP 2 463 111, Mar. 1, 1949.

A device for treating yarn and other strand materials with liquids during delivery to a winding machine is claimed. The device comprises a winding machine with a rotary winding spindle driven at constant speed, a traversing thread guide, and a frame for supporting the thread guide to adapt it to recede from the spindle during the growth of the package. In combination with the winding machine the device claims an annular basin for applying the liquid to the yarn as it delivers it to the package. The basin has a raised rim across which the yarn draws. A means is provided for continuously feeding liquid to the basin to cause it to flow across the rim, and a means operated by the movement of the frame increases the rate of feed of the liquid in proportion to the increase in

the speed of the yarn delivering to the winding package.

## Special yarns B 7

**Highly stretchable yarn.** Boutwell H. Foster (to Dominion Rubber Co. Ltd.). Can. P. 447 006, Mar. 2, 1948.

A balanced all-textile yarn having an elastic extensibility range in excess of 100% comprises a yarn having a crepe twist and which in this highly twisted condition is coiled helically about a central axis in spaced relation thereto and in the direction in which it is twisted, a second yarn having a crepe twist in the opposite direction and wound as a cover helically over the coils of the first yarn but in the opposite direction to the first coils, and each of the crepe twisted yarns having in the relaxed condition a large number of helical coils.

**Yarn and fabric.** Godfrey Bloch. USP 2 465 996, Apr. 5, 1949.

A wool substitute product is composed of crimped and resilient artificial filaments in yarn form. The filaments have multiple points of contact, and the crimp forms myriad air pockets comparable to those in wool yarn. The filaments are fixed together at points of intersection to maintain the fibers in their original positions and to prevent relative movement. Air pockets are thus retained in the yarn, and fabrics composed of these yarns will retain their warmth characteristic.

## Yarn products B 8

**Braiding machine.** Hector Loader (to Emslo Braid Corp.). USP 2 469 047, May 3, 1949.

A braiding machine for braiding elastic threads includes work take-up rolls, rubber warp feed rolls, a power shaft, and means to drive the take-up rolls from the power shaft. A gear train including change gears is provided to deliver power from the power shafts to the feed rolls. Both sets of rolls are driven in definite timed relation to tension the warp delivered by the feed rolls.

**Cord processing apparatus.** Lindsay S. Hall & Raymond E. Solliday (to Wingfoot Corp.). USP 2 464 502, Mar. 15, 1949.

Means are provided for effecting a simultaneous drying and ironing action upon a doubled thread, yarn, cord, and the like by the application of heat so as to produce a product having a smooth finish and characterized by a high uniform tensile strength and embodying all of the features known





to be desirable for incorporation of the product in vulcanized rubber products such, for example, as pneumatic tires and the like.

**Cord processing apparatus.** Raymond E. Solliday & John T. Gordon (to Wingfoot Corp.). USP 2 464 536, Mar. 15, 1949.

This invention provides a device for producing a smoothing effect upon a doubled thread, after it has been stretched and preferably prior to the twisting operation, so as to facilitate the drawing in of all of the loose fibers present in the component elements of the thread; it further provides a means for burnishing the outer surface of a thread, cord, and the like either with or without the application of heat so as to produce a smooth product characterized by a high, uniform tensile and embodying all of the desirable features of reinforcing elements for vulcanized rubber products such, for example, as pneumatic tires and the like.

**Endless cord for venetion blinds.** Jos. L. Hunter (to Hunter Douglas Corp.). USP 2 466 951, Apr. 12, 1949.

An operating cord for venetian blinds comprises a length of cord of plastic material which is flexible at atmospheric temperatures and has reinforcing threads extending longitudinally through it. The ends of the cord are joined together to form an endless cord and reinforcing threads extend through the joint to make it homogeneous with the remainder of the cord.

**Flier.** Edwin G. Egge (to U. S. Rubber Co.). USP 2 466 797, Apr. 12, 1949.

This invention provides a flier for covering machines having a flier wire pivotally secured to the flier body so that it can be swung inwardly towards the body to lie out of the way of the package when the latter is to be doffed. The flier is easy to thread up due to a shoulder construction that limits the swinging movement of the flier wire, and is largely self-cleaning thereby keeping itself free of lint. The flier body is conveniently formed by cutting it from a fiber sheet.

**Means for manufacturing of rug braids.** Seymour Eskow. USP 2 468 870, May 3, 1949.

The mechanism for manufacturing a cord for use in braided or knitted tubular covered core rugs and having a knitted cover and soft yarn filler is provided. The mechanism includes a circular knitting machine with a rotating frame by which the cover is made. The rotating frame includes a tube, having its axis concentric with that of the

rotating frame and with one end adjacent to it, through which the yarn filler is drawn. The tube has an internal diameter of the size such that the yarn contacts the end and twists as the tube is rotated. The tube and rotating frame are connected so that they rotate together.

**New high-speed cable braider.** A Special Correspondent. *Textile Recorder 66,* 60 (Mar. 1949).

This is a description of the new Hoburn (Hoburn Aero Components Ltd., Rochester, England) cable braider. The braider is a single-head, self-contained machine of the maypole type and is trackless with the main driving gears and carrier bases running in oil.

**Process for making cord.** Leslie G. Henning & Frank L. Sessions. USP 2 466 808, Apr. 12, 1949.

The process of treating natural vegetable staple fiber cord includes shrinking and impregnating it without substantial tension in a solution of urea and hexamethylenetetramine, stretching it while wet, drying at the stretched length without further stretching, and heat-shrinking and heat-curing the cord without substantial tension above about 80°C. Cords treated by this process are claimed to have improved strength, elastic characteristics, toughness and durability, and an increased ability to withstand high, dry temperature without injurious effects.

**Rayon cord for pneumatic tires.** M. Guyot. *L'Industrie Textile 64,* 98-9 (May, 1949); *in French.*

The advantages of high-tenacity rayon over cotton for use as tire cords is reviewed. The excellent resistance of rayon to heat is illustrated by a test in which cords embedded in rubber were heated continuously for 3 weeks at 140°C. This caused no change in their breaking strength and a loss of only 33% in their elongation. When cotton cord is dried for use in tires, its moisture content is reduced from 7 to 2.5%, whereas rayon goes from 11 to 4% moisture. This drying causes a loss of strength in cotton, but an increase in strength in rayon, and a reduction in the elongation. This makes possible a considerable reduction in the amount of textile material required.

CORDAGE GLOSSARIES Belfast, H. R. Carter Publications Ltd. [1949]. Price: 3s 6d net.

A feature of this extremely useful book is the use of large size pages so that reference is facilitated by giving about 40 definitions on each page, that





is, 80 terms at a glance on 2 facing pages. The book is divided into 3 sections, namely, glossary of cordage fibers, a glossary of terms relating to the use of fiber rope, cord and twine, and a glossary of cordage products.—*Textile Recorder.*

## Yarn applications B 9

**Precision measuring instrument having a thread for a motion transmission link.** Wm. Whitehead (to Celanese Corp. of Am.). USP 2 468 906, May 3, 1949.

In a precision measuring instrument having a condition responsive device, an indicator and a motion transmission tensioned cable forming a connection therebetween, the tensioned cable comprising a high tenacity, dimensionally stable regenerated cellulose thread, the thread comprising stretched and saponified continuous filaments having a basis of cellulose acetate and having an elongation no greater than 0.3% over a variation in relative humidity of 10 to 100% and an elongation of no greater than 0.5% over a temperature variation of −50 to +80°C.

**Sole and method of making the same.** Jon Gregg (to Lynne D. Gregg). USP 2 467 821, Apr. 19, 1949.

An outsole for shoes, slippers, etc. consists of cover yarn braided around cores and includes thermoset and fibrous materials. The thermoset yarns in adjacent windings of the braided strip are fused together and penetrate the fibrous threads to unite the windings. The thermoset material has a flexible, unstretchable filament embedded in it.

## Yarn testing and numbering B 10

**Universal numbering system for textiles.** Anon. *Can. Textile J. 66,* 52-4, 56 (May 13, 1949).

A report to the Textile Technical Federation of Canada by the Canadian Committee making recommendations on the subject of a universal numbering system for textiles. The need for a universal system, the type of system, proposed units, and means of designating ply yarns are considered.

**Universal yarn numbering systems.** Arthur G. Scroggie. *Textile Research J. 19,* 292-6 (May, 1949).

A review of the respective merits of the Grex and gK systems for yarn numbering.

## FABRIC PRODUCTION C

**Impact of market changes on manufacturing.** Rene Bouvet, Am. Viscose Corp. *Papers Am. Assn. Textile Technologists 4*, 124-28 (June, 1949).

Recent trends in the textile market have emphasized the importance of producing quality textile products. This discussion is concerned with various steps in the production of rayon fabrics and suggestions are given for improving quality at the various steps.

### Yarn preparation C 1

**Automatic control of sizing.** Julien Christian. *L'Industrie Textile 64*, 146-7 (July, 1947); *in French.*

The Humidocontrol, an instrument for detecting small charges of electricity, is described and illustrated. It is used to measure the charge developed when a fabric is dried and to indicate the state of dryness. It can be used to control the drying of warps or of fabrics automatically, semi-automatically, or by hand.

**High-speed direct warper developed by Sipp-Eastwood.** Anon. *Textile Industries 113*, 191 (May, 1949).

A new warper which features heavy construction and minimum vibration at high operating speeds is described and illustrated.

**Production of sizing materials.** Solvay & Co. French P. 932 351, Nov. 24, 1947. (through *Bull de L'Institut Textile*).

Suspensions of starch are treated with a salt of chlorous acid, either in the solid state or in concentrated solution. The product is then centrifuged and dried. The reaction may be carried out in a neutral or alkaline solution at atmospheric temperatures.

### Weaving C 2

**Apparatus for producing false selvedges upon woven fabric.** Antoine F. Morel. USP 2 465 254, Mar. 22, 1949.

A new or improved apparatus for producing false selvedges upon fabrics woven from artificial silk composed of cellulose derivatives which are inherently thermoplastic comprises means for mechanically traversing the fabric over gas burners mounted in proximity to the fabric, whereby the raw or frayed longitudinal edge or edges of the fabric is or are more or less melted and subsequently become solidified. The burners are adapted to be moved into or out of promixity to the fabric being treated and the flames of the burners are turned up when the burners are raised into proximity with the fabric being treated and are turned down when the burners are lowered, both of the movements being effected simultaneously and automatically. The traversing means of the burners are interconnected with the driving means and with a hand lever whereby all the moving parts of the apparatus may be caused to start and stop simultaneously. The hand lever is connected with electric switch mechanism for controlling the prime mover, with brake mechanism for stopping the apparatus, and with the gas supply. Fabric under treatment is drawn from a freely rotating bobbin or the like by a power driven bobbin and a plurality of pairs of rollers are interposed between the 2 bobbins under and between which passes the fabric, one of the pairs of rollers being power driven. Means are preferably associated with the freely rotating bobbin for retarding its movement.



**Bobbin check for weft replenishing looms.** Richard G. Turner (to Crompton & Knowles Loom Works). USP 2 469 089, May 3, 1949.

In a weft replenishing mechanism having bobbin supports inclined downwardly toward a bobbin transfer position, a bobbin check is pivotally supported on the mechanism at a point above the transfer position. The check is normally in position to be engaged by a bobbin moving down either support and is moved by the bobbin toward the other support. A stop means limiting movement enables the check to stop the bobbin in transfer position.

**Cloth construction and fabric analysis.** W. J. Sullivan. *Textile Mfr. 76*, 168 (Apr. 1949).

Of the 3 foundation weaves—plain, twill and satin—the majority of fabrics are woven in plain and twill weaves. This article is mainly concerned with cotton cloths.

**Control for Axminster loom tube frame conveyor systems.** Raymond F. Dion (to Crompton & Knowles Loom Works). USP 2 469 717, May 10, 1949.

Axminster looms customarily employ a tube frame conveyor system comprising endless chains to move the tube frames one at a time to a transfer station where they are detached from the system for a tuft forming operation and then returned to the chains. In wide Axminster looms the conveyor system together with its full complement of tube frames is very heavy and it is desirable to provide supplemental driving means

for the greater part of the system. The present invention provides 2 motor controls one of which operates in timed relation with the tight section moved by the pullover mechanism and the other of which is operated by the motor driven tight section, and interconnects these controls in such manner that the motor and pullover shaft will move their respective sections equal distances during an extended period of weaving. Each control includes a single switch closure of which is determined by its tight section, and the undriven wells merely permit slight temporary variations in the amounts of motion of the 2 tight sections without in any way controlling the motor.

**Control for loom electronic systems.** Victor F. Sepavich & John C. Manoog (to Crompton & Knowles Loom Works). USP 2 466 332, Apr. 5, 1949.

Improvements in an electronic weft detecting system for looms are claimed. These include means by which the heating of the cathodes will be started a short time before the loom is set into operation; electric means by which the cathode heating transformer will be immediately energized as soon as the loom motor is set in motion and before the shipper handle is moved to running position; a grid control circuit including a condenser one side of which is grounded to assist in maintaining normal preventive bias of the grid when the detector is not indicating weft exhaustion; and a low voltage dectecting circuit to control the grid and a higher voltage circuit including the plate of the electronic tube and the electromagnetic device which when energized initiates a change in loom operation.

**Cost and weaving data on random spun blend.** Anon. *Am. Wool Cotton Reptr. 63*, 11-12, 14 (June 2, 1949).

A random spun blend fabric is an example of a medium-weight material consisting of yarns having a combination or blend of fibers and is produced entirely from synthetic yarns. An example of this group of fabrics is analyzed and consists of viscous staple and acetate yarns drawn irregularly throughout the width of the cloth. This gives an uneven pattern without disturbing the texture.

**Drafted diagonals.** D. C. Snowden, Leeds Univ. *Textile Recorder 67*, 80-1 (May, 1949).

A number of twills and fancy diagonals are analyzed and suggestions are given for reducing the number of heddles used in weaving them.

**Driving mechanism for Axminster tube frame systems.** Walter H. Wakefield (to Crompton & Knowles Loom Works). USP 2 469 756, May 10, 1949.



Axminster looms operate with a series of tube frames carried by endless chains operated in such manner as to advance the tube frames one at a time to a transfer position where they are detached from the chain for tuft forming operations and then returned to the chain. The loom ordinarily has a pullover shaft which advances the tube frames to the transfer station at regularly recurring intervals. In narrow Axminster looms the pullover shaft is able to move the entire tube frame system, but in wide looms the system is quite heavy and additional means to drive it is desirable. The present invention provides a motor for the upper part of the conveyor system tending to drive the latter slightly faster than is needed for loom operation, and by means of gearing between the aforesaid upright shaft and the loom reduce the motor speed to a point which will permit it to drive its part of the conveyor system at the proper rate for loom operation.

**Electric controller for guiding fabrics.** Julian Dungler. French P. 933 555, Jan. 1, 1948 (through *Bull. de L'Institut Textile*).

The disadvantages of a contacter with only one feeler which reacts to the smallest irregularity in the selvedge is eliminated by using 2 feelers which release the opposite movements of the guiding mechanism. This prevents the selvedge from passing minimum or maximum lateral positions which are the limits set for it.

**Factors which influence efficiency in terry weaving.** O. Pomfret. *Textile Mfr. 76*, 177-88 (Apr. 1949).

This discussion includes details on loom setting and operation in the weaving of terry fabrics.

**Harness actuated stop motion.** Howard J. Cherry. USP 2 465 575, Mar. 29, 1949.

A harness actuated stop motion is claimed which will operate automatically to stop the operation of the loom as soon as a harness connection becomes broken or unduly slack. The device consists of a plurality of rocker arms, harnesses, straps connecting the harnesses to the rocker arms and tending to cause movement of the rocker arms in one direction. The rocker arms have arcuate slots with a bar passing through the slots which are normally out of contact with the rocker arms. Electrical connections are attached to the bar and means are provided for actuating an electrical

circuit when one of the rocker arms engages with the bar in an abnormal position.

**Harness motion for looms.** Paul Matweeff. USP 2 469 200, May 3, 1949.

An improved loom is claimed with a harness motion in which the harness frames are actuated positively and accurately and may be locked in desired positions, an improved lay motion in which wide variation in the speed of the lay in each cycle is provided, a slitter knife motion with the slitter knife cord not subjected to objectionable jerks, an overload friction connection between the motor and main crank shaft and an improved projector motion. An improved means for mounting the heddle bars, protective motions for effecting quick stoppage of the loom, and an improved picker stick motion are also provided. A saving of approximately 1 to 1¼ hrs. in operating time during an 8 hr. period with an increase in production is claimed for this loom.

**Improved loom spreader.** Anon. *Textile Industries 113*, 191 (May, 1949).

A new loom spreader is reported to give increased speeds, less vibration, and better quality in production. The rigid union of spreader and loom sides is claimed to hold gears in upper mesh at all times.

**Improved selvedge jacquard machine.** Our Own Correspondent. *Tertile Recorder 66*, 57 (Mar. 1949).

Features of a new jacquard for weaving a manufacturer's or merchant's name in the selvedge of fabrics are described. The usual top gear has been dispensed with entirely in the machine which has been designed for looms using a rotary dobby for the patterning of the body portion of the cloth.

**Improved silk and rayon loom.** Tuner. *Textile Mfr. 76*, 175-6 (Apr. 1949).

Special features of a new silk and rayon loom, developed by Henry Livesey Ltd., Blackburn (England) include the provision for larger shuttles, boxes and pirns. The fewer stoppages required result in increased production.

**In spite of its advantages, there are difficulties in weaving nylon.** Robt. Leyniat. *L'Industrie Textile 64*, 150-1 (July, 1947) ; *in French.*

Troubles experienced in the weaving of nylon are reviewed.

**Lessening tight and loose ends in fabrics.** H. E. Wenrich. *Rayon & Syn. Tex. 30*, 67-8 (June, 1949).





The cause of tight and loose end streaks in fabrics and means of correcting the fault are considered.

**Loom attachment for weaving ladder webbing.** Frederick D. Murdock & John A. de Angelis (to Harry Dexter Peck). USP 2 469 202, May 3, 1949.

An attachment for looms, having stationary weft supplies, for weaving ladder webbing consists of a pair of thread arms for carrying weft threads back and forth through separate sheds of warp threads and a pair of reciprocally movable needles to operate with the thread arms. A cam means is associated with the thread arms for moving the arms toward one another as they carry the threads in one direction and for moving them away from one another as they carry the threads in the other direction. Other cam means are provided for moving the needles away from one another as they move forward into cooperative action with the thread arms to bring the eye of each needle between a thread arm and the weft thread carried by it.

**Loom harness.** John J. Kaufman (to Steel Heddle Mfg. Co.). Can. P. 445 521, Dec. 9, 1947.

In a loom harness including a heddle frame having top and bottom rails and heddle supporting rods comprising thin flat metallic strips removably mounted in said frame, the means for supporting said rods intermediate the ends thereof comprising, in each location, a plate member secured to the rod in spaced relationship, and a separate bolt member mounted in one of the rails of the frame, said plate member and bolt member being in locked engagement with each other, and means carried by one of said members for normally maintaining the locked engagement of said parts.

**Loom temple.** Thos. C. Woodman (to Celanese Corp. of Am.). USP 2 468 908, May 3, 1949.

A resilient member having the consistency of a block of soft vulcanized rubber comprises a cylindrical body of matted fibers. The body of fibers is partially impregnated with a flexible film-forming material in an amount of from 10 to 25% of the weight of the fibers with a core of unimpregnated fibers. The average density of the core is from 0.2 to 0.4 g per cc. The member has a bore for the reception of a spindle and is suitable for employment as the cloth-engaging part of a loom temple roller.

**Lug strap support for textile looms.** Wingo Herron. USP 2 467 260, Apr. 12, 1949.

A loom lug strap support comprises an open

frame element having a projection with vertically spaced pads and having recesses for receiving a wear plate and the picker stick. The wear plate is adapted to abut on the pads and to engage an edge of the picker stick. A clamping plate with vertically spaced pads is provided for engagement with the opposite edge of the picker stick. A filler piece is adapted to be received within the bight portion of the strap.

**Netted fabric machine.** Wilfrid M. Boulais (to Boulais Machine Co.). Can. P. 446 832, Feb. 24, 1948.

In a netted fabric machine, means are provided for holding a plurality of warp threads arranged in spaced horizontal rows and spaced vertical columns, means to hold a plurality of spool threads arranged in spaced horizontal rows and spaced vertical columns, said second named means being shiftable laterally for changing the positions of the spool threads relative to the warp threads, and means to move the spool thread holding means in a circular generally vertical direction for further changing the positions of the spool threads relative to the warp threads and moving all of the spool threads entirely out of the field of warp threads for packing purposes.

**New type picker stick check.** Anon. *Textile Industries 113,* 177 (June, 1949).

A new picker stick check motion is briefly noted. The motion is reported to eliminate check straps on regular looms and modernizes the checking movement on gingham box looms.

**Picker stick connection.** Jos. Vanore. USP 2 466 287, Apr. 5, 1949.

This invention provides a picker stick connection which makes a picker stick readily adjustable to the operating crank arm of a loom. The device comprises a bar pivotally connected to the crank arm, its opposite end formed with a number of openings, a pair of plates embracing the opposite end of the bar and opposite end sections adapted to embrace the stick. A pivot pin extends through the end sections of the plates to form a pivotable connection. The other end sections of the plates are formed with registering elongated slots, and a clamping bolt is disposed through the slots for clamping the plates to the bar.

**Pneumatic method of projecting the shuttle.** J. Heaton. *L'Industrie Textile 64,* 125-7 (June, 1947).

A pneumatic drive for loom shuttles developed in Great Britain is described and illustrated. It is





said to give a higher rate of production, and that, by using compressed air of a suitable humidity, the warp yarns are conditioned so as to give better results.

**Rapid stroboscopic study of production looms.** Evans A. LaRoche & Hugh M. Brown. *Textile Research J. 19,* 288-96 (May, 1949).

A report on the development of a method of studying looms in motion which incorporates the following characteristics: it should (1) be sufficiently rapid to check looms in production; (2) be compact and streamlined for minimum interference in the loom aisles; (3) operate in normal mill illumination; and (4) not interfere with the operation of the loom while making the test.

**Series derived from standard pre-war fabrics.** Eugene Philippe. *L'Industrie Textile 64,* 147-50 (July, 1947); *in French.*

Tables of data are presented in each of which the index of coverage is kept constant, that is, the ratio of the surface covered by the warp and the filling to the total surface of the fabric is the same, although the yarn diameter and the number of yarns per unit length vary. It is concluded that all fabrics with the same index of coverage are about equally difficult to weave. This is stated as a general principle which is especially applicable to weft satins, mole skins, etc.

**Stabilized fabric.** Edw. C. Pfeffer, Jr., John A. Tweed & Jack Jarmak (to Cluett, Peabody & Co., Inc.). Can. P. 446 996, Mar. 2, 1948.

A method of preparing a stabilized fabric suitable for shirting and launderable dress goods and having substantially the appearance, feel and draping qualities of shirting and the like fabrics composed of pure spun rayon comprises interweaving filling yarns consisting of pure spun rayon with warp yarns consisting of a blend of from 40% to 60% rayon staple and from 60% to 40% cotton staples, the thread count of the warp yarns being from 90 to 136 per in. and that of the filling yarns being from 50 to 60 per in., thereafter subjecting the woven fabric to an aqueous finishing treatment, and subsequently subjecting the treated fabric to warp-wise compressive shrinkage, thereby stabilizing it in respect to progressive laundry shrinkage.

**Two standards for timing pick on high speed looms.** Gene Reichley. *Textile Age 13,* 38-40 (May, 1949).

Two standard methods for timing the pick on high speed looms are described, and the merits of each

are discussed. By treating the timing of the picking motion as a set standard a large percentage of substandard cloth may be eliminated.

**Warp beam for looms.** Frank D. Lindquist (to Crompton & Knowles Loom Works). USP 2 473 155, June 14, 1949.

This invention provides a warp beam having the warp heads screwed upon the barrel and threaded wedges to fix the position of the heads of the barrel.

**Weaving defects in rayon tire cord fabrics.** J. J. Sussmuth. *Rayon & Syn. Tex. 30,* 65-6 (June, 1949).

Defects in the tire cord arising from faulty weaving which cause trouble in the unwinding of a roll during dipping are discussed. Among those mentioned are bagginess, sloughing off of fabric, knots in weaving, etc. The importance of preventing these defects at their source is stressed.

**Weaving reed.** Isaac Andrews (to Andrews Co.). USP 2 468 800, May 3, 1949.

A weaving reed having backs and dents comprises a pair of reinforcing bars for each back, which extend beyond the back and are bent towards each other. An end member having a pair of parallel members with circular ends enveloping the circular ends of the backs is provided for each end of the back. The end members have parts parallel with each other extending between members of the backs. The ends of the reinforcing members engage the outer surfaces of the end members, and a means for fastening each pair of parallel members together is provided.

## Knitting C 3

**Adjustable needle head gauge for single-unit full-fashioned machines.** Anon. *Textile Industries 113,* 150, 153 (May, 1949).

Needle heads may be quickly aligned by an adjustable gauge. This device assures that the bar is straight so the loops on one side of the stocking will not be tighter than those on the other side. A description of the gauge and the procedure for making adjustments with it are given.

**Apparatus for feeding thread to a textile machine.** Chas. H. Colvin & Bessie Klumpp (to Robt. Reiner, Inc.). Can. P. 446 895, Feb. 24, 1948.

An apparatus for feeding thread to a knitting machine or the like comprises in combination, a supply of thread, means including an electric motor for driving the supply to feed thread therefrom, means for tensioning the thread as it is fed





from the supply, and means responsive to a variation in the tension of the thread for affecting the operative condition of the electric motor.

**Attachment provides versatility of heel and sole design.** Anon. *Textile Industries 113,* 161 (June, 1949).

The new Pointex attachment for the Wildman single head full-fashioned hosiery machine is reported to make possible any design of high spliced heels and reinforced soles in 2 needle steps.

**Automatic pattern placer.** Anon. *Textile Industries 113,* 165 (June, 1949).

An automatic pattern placer for use on Supreme Model SA-ROF variable stripe and plaid knitters enables the placing of a pattern wherever it is desired in a plain or striped jersey.

**Circular knit hosiery and method of making same.** Harry N. Sheppard (to Scott & Williams, Inc.). USP Re 23 094 (USP 2 431 204), Mar. 22, 1949.

A method of strengthening the heel of a circular knit stocking at the inner ends of the suture lines joining the gussets is claimed. The heel comprises a plurality of adjacent tapered gussets arranged one below the other, contiguous to the instep fabric. Each course in the gussets contains less than half the wales in the stocking leg. One of intermediate gussets extends further into the instep than the gusset above it, and the inner ends of the suture on each side of this intermediate gusset are separated. Two or more strengthening courses are provided around the top of the heel, extending shortly beyond the end of the lowest of the gussets on each side. The leg of the stocking is knit with one yarn and the heel knit of a heavier yarn.

**Guide bar motion for warp knitting machines.** John R. McLaughlin (to Kidde Mfg. Co., Inc.). USP 2 466 036, Apr. 5, 1949.

A mechanism for imparting endwise movement to a longitudinally movable guide bar in a warp knitting machine comprises a pattern cam for imparting the longitudinal movement to the guide bar, a driving member rotated continuously at a constant speed, a driven member associated with the driving member and arranged so as to rotate the cam. A cooperating crank means alternately effects fast and slow rotation of the driven member.

**Improved tricot knitter by Whitin.** Anon. *Textile Industries 113,* 163 (June, 1949).

Features and developments found in the Model C-2 high speed tricot knitting machine are noted.

A higher quality knitted fabric can be manufactured on this machine.

**Knit goods and the like, and methods.** Lawrence W. Gottschalck. USP 2 469 961, May 10, 1949.

Shaped knit goods and other textile fabrics which require a shaping operation are provided with guide marks comprised of non-fugitive fluorescent material, defining the contour of the article, which are invisible under ordinary conditions, but which are visible under the rays of an ultra-violet lamp.

**Knitting Arts show successful.** Anon. *Am. Wool Cotton Reptr. 63,* 12-13 (May 19, 1949).

Highlights of the Knitting Arts Exhibition, including the Foster Knit-Tube, a variable stripe and plaid knitter, the Model C-2 tricot knitting machine, the Magnetension for No. 50 winders, the package type adjustable speed AV drive, and a skein-dyeing machine are discussed.

**Machine preboards and boards in one operation.** Anon. *Textile Industries 113,* 166 (June, 1949).

A machine that permits preboarding and finish boarding in a single operation is briefly described.

**Machine separates hose by length.** Anon. *Textile Industries 113,* 161 (June, 1949).

A new machine, used in conjunction with the expanding inspection form, is described and illustrated. The machine receives the stockings from the form, draws them into the machine by suction, and by pedal control drops them into one of 3 containers according to the length of the stocking. The machine also counts the hose as they drop into the containers and rings a bell when the proper number are in the bags.

**Manufacture of knitted wear true to shape.** Fritz Seiler (to Textile Researches Ltd.). USP 2 469 134, May 3, 1949.

A method for producing finished shape knitted garments with ornamental effects and reinforcements is claimed. The method comprises automatically knitting a left and right half of the garment by producing rows of loops along the entire length of the piece with shorter rows of loops arranged between other rows symmetrically with respect to the axis of the garment. Areas of tapering shape are formed to effect the final correct shaping and to produce patterns extending longitudinally of the garment. This method may be used in producing children's hosiery, leggings, etc.

**Method of and apparatus for forming stockings and the like.** Henderson C. Gillespie (to Radio Corp. of Am.). USP 2 469 640, May 10, 1949.

This invention provides a method of pre-boarding stockings with the aid of an electro-conductive closed flat form which comprises placing a stocking on and fully in contact with the form to provide uniform heat conduction from the form to the stocking, passing the stocking bearing form successively past a pair of operating stations, moistening the stocking at the first of the stations, uniformly heating the form inductively from opposite sides with high frequency current to a predetermined degree at the second one of the stations, and thereafter causing the heated form to impart heat uniformly to the stocking by conduction through the full contact with the form and thereby to expel the moisture therefrom and cause the stocking to shrink onto the form.

**Napping attachment for knitting machines.** Fulton D. Oakes. USP 2 465 916, Mar. 29, 1949.

A napping attachment for circular knitting machines is provided for raising nap on the surface of tubular fabrics. The attachment comprises a napping brush with means to rotate the brush around the fabric. The napping brush is movable radially relative to its rotative movement between an inoperative position out of engagement with the fabric and an operative position in which it engages the fabric. A means is provided, controlled by a pattern mechanism which is in turn actuated by the knitting machine, to move the napping brush into its operative position against the action of the spring means. A latch holds the napping brush in its operative position.

**Non-run multiple feed knitting machines.** Anon. *Textile Industries 113,* 166 (June, 1949).

The new B-17 latch needle knitting machine has a multiple feed, is equipped with a stop motion, and has an electric drive. The machine makes non-run fabrics.

**Pouch tensioning device for knitting machine.** Hemphill Co. Australian P. 132 156, June 15, 1945.

A circular, independent needle, knitting machine having coaxially superposed needle cylinders includes an auxiliary fabric take-up comprising a vertically movable ring provided with points to engage knitted fabric and a vertically movable fabric spreader adapted to pass through the ring.

**Preventing streaks in nylon hosiery.** Stanley Rosenberg. *Textile Industries 113,* 143, 145, 147, 149 (May, 1949).

A good understanding of the machine used, the

thread used, proper tension, and condition of the yarn as it is being knit is of utmost importance in preventing streaks in nylon hosiery. The new type flat bottomed left stitch cam and the new style sinkers and sinker cap cams and settings have helped in eliminating streaks in the 400-needle machine. Suggestions on cleaning machines and needle maintenance to eliminate streaks are given. Some details for avoiding horizontal streaks also discussed.

**Racking machanism for knitting machines.** Emil J. Berger & Howard K. West (to The Dexdale Hosiery Mills). USP 2 468 728, May 3, 1949.

A racking mechanism for a knitting machine having a main cam shaft and a narrowing screw spindle is claimed. The mechanism includes a ratchet wheel on the spindle, a pawl bodily oscillatable about the spindle to act on the ratchet wheel, a lever fulcrumed to rock on a fixed axis, interposed operating connections between the pawl and lever, a pair of rotary cams on the main cam shaft with 2 arms, and a clutch means for selectively connecting the lever to one or the other 2 arms.

**Rubber yarn furnisher.** Anon. *Textile Age 13,* 77-9 (May, 1949).

A new device for furnishing rubber yarn at a uniform rate to knitting needles, eliminating the usual drag of rubber yarn from the cone, is noted. Greatly improved appearance and uniformity of stretch in rubber tops are results obtained by this device.

**Simplified operation in preboarding equipment.** Anon. *Textile Industries 113,* 165 (June, 1949).

With a new dual-board take-out device for P & S preboarding equipment the boards are brought out individually and continuously at the 2 boarding positions on the frame. Wear and maintenance are claimed to be cut to a minimum.

**Stop motion for knitting machines.** Allan C. Thomas (to Camille Dreyfus). Can. P. 446 916, Feb. 24, 1948.

A stop or detector motion for a knitting machine and the like for detecting faults in a fabric comprises a photo-electric cell positioned on one side of the fabric and extending substantially the full width of the fabric, a source of light co-extensive with the photo-electric cell and positioned on the opposite side of the fabric so as to direct light on to the fabric, a current meter operative by a change in light intensity on the photo-electric cell





caused by faulty fabric passing between the photo-electric cell and the source of light and means, including a second source of light and a second photo-electric cell, under control of the current meter, for stopping the machine or giving a warning signal.

**Straight bar knitting machine.** Wm. A. Cooper & Ernest Start (to Wm. Cotton Ltd.). USP 2 466 536, Apr. 5, 1949.

A straight bar knitting machine is claimed which combines a clamp or trapper located beyond the selvedge for securing a withdrawn thread which, upon reintroduction, extends from the clamp to the selvedge, and a cutter mechanism for severing the thread subsequent to reintroduction. The cutter mechanism comprises a thread-cutting instrument movable to receive the thread on it as the thread is being laid for a course.

**Synchronized cutters eliminate waste.** Anon. *Textile Industries 113,* 174 (June, 1949).

An automatic cutting mechanism for use on the Supreme Model SA automatic variable striper is reported to eliminate all waste and to give fabrics that are smooth and even in texture.

**Two speed and oscillatory drive.** H. Wignall. *Textile Mfr. 76,* 166-7 (Apr. 1949).

This is a description of the driving mechanism on the Scott and Williams Model "K" machine; the merits of this type of drive are discussed in detail.

**Wrapping head for knitting machine.** Hemphill Co. Australian P. 132 155, June 15, 1945.

A circular, independent needle, knitting machine having co-axially superposed needle cylinders includes a wrapping mechanism with a wrapping spindle positioned eccentrically of the cylinders and movable into an idle position substantially concentric with the cylinders. The wrapping spindle has a head positioned at wrapping level with respect to needle knitting.

## Special fabrics C 4

**Bonded fabric industry.** Raymond B. Seymour, The Atlas Mineral Products Co. *Am. Dyestuff Reptr. 38,* 453-4, 480 (June 13, 1949).

This review of bonded fabrics, their properties and methods of manufacture, is based principally on the patent literature. 62 references.

**Heater.** Lovic P. Herrington (to Electric Heat Devices, Inc.). USP 2 469 466, May 10, 1949.

In a window drape, an electrical heating element comprising a sheet of noninflammable cloth and

resistance type heating elements supported by the sheet, a flexible reflecting element mounted behind the heating element, a covering encasing the sheet and the reflecting element and window drape hanging means supporting the window drape assembly from above and adjacent to the window.

**Making simulated woven fabric.** Alden W. Hanson (to The Dow Chemical Co.). Can. P. 447 010, Mar. 2, 1948.

A method of producing a simulated woven fabric at a faster rate than can be obtained by weaving on a loom comprises braiding a tube of filaments in which the filaments cross at an angle substantially 90° to each other, slitting the braided tube parallel to the path of one filament in a helical direction along the longitudinal axis of the braided tube, and pressing the thus-formed fabric to remove the curl from the helix and form a flat fabric, the fabric being substantially identical with that produced by simple weaving on a loom.

**Nonmetallic armor.** Earle L. Kropscott & Arnold R. Gabel (to The Dow Chemical Co.). USP 2 466 597, Apr. 5, 1949.

A nonmetallic armor for protection against low velocity projectiles is claimed which has an internally yieldable laminated structure. The armor consists of layers of a fibrous glass textile having a continuous filament type warp and a cotton filler, a binding agent which consists of a mixture of ethyl cellulose and a mold release agent comprising stearic acid and magnesium stearate, and a solvent plasticizer for the ethylcellulose, monophenyl diorthoxenyl phosphate.

**Production increased three-fold by shuttleless smallware loom.** A Special Correspondent. *Textile Recorder 67*, 76-7 (May, 1949).

A shuttleless loom capable of operating at a speed of 280 picks per min. is now being made available. The loom, which is made in 3 types for producing fabrics up to 2 in., 1½ in., and ¾ in., was developed by Clutsom & Kemp Ltd. (England) and has been in operation in their plant for several years. Instead of a shuttle the loom uses a thread arm with a curved tip with a hole through which the filling thread passes. Other features include use of a common warp for all weaving units on a machine, stop motions, and large cones for weft supply.

**Self-cooling water bag.** Fred H. Wenzel & Herman F. Wenzel. USP 2 467 792, Apr. 19, 1949.

A self-cooling container for water comprises a liquid-holding bag at least one wall of which is a





fabric, such as cotton material, having small openings large enough to permit seepage. An impregnator, distributed throughout the fabric of the bag to constrict the size of the openings, controls the rate of seepage. The size of the openings are controlled so as to transmit water through the fabric to form a film on the exterior of the bag and to keep the water transmission to within the evaparation capacity of the atmosphere. The evaporation of the water from the film draws heat from the liquid in the bag and restricts the rise in temperature of the liquid.

**Textiles.** Carleton S. Francis, Jr. (to Sylvania Industrial Corp.). Can. P. 447 174, Mar. 9, 1948.

A process for producing felts comprises suspending pre-formed potentially adhesive fibers and non-adhesive fibers the average length of which is less than normal felting length, in an upwardly moving aeriform current in a confined space, to effect mixing thereof, permitting the fibers to fall downwardly to be deposited in the form of a mixed product in which there is relatively little if any parallelism of the fibers and activating the potentially adhesive fibers to bind fibers in the product.

## Inspection and testing C 5

**Cloth inspection and handling system.** Oscar J. Norton (to Dan River Mills, Inc.). USP 2 470 575, May 17, 1949.

The disadvantages of prior methods of inspecting cloth are avoided by providing a means for varying the speed of a driven cloth skewer so that the peripheral speed of a roll of cloth wound on the skewer is maintained constant, and the cloth is accordingly drawn past an inspection station at a constant rate of travel and without marring of the cloth. Means are also provided for easy removal of the inspected roll of cloth from the winding skewer.

**Cloth inspection machine developed.** Anon. *Textile Bull. 75*, 86 (Apr. 1949).

A new cloth inspection machine, developed at the Institute of Textile Technology, Charlottesville, Va., operates on the principle of presenting the operator with a stationary image of the moving cloth. An oscillating mirror tracks the moving cloth, and operates at such a speed that the eye is unable to detect any break in the image. The machine is so synchronized that when the operator stops it for a defect, the fabric is before him on the burling table.

**Fundamental study of fabric properties.** E. Vernon

Lewis, E. I. du Pont de Nemours & Co. *Textile Bull. 75,* 81-2, 84-6 (Apr. 1949).

See TTD: *6,* 459.

**Determination of nylon content in fiber mixtures.** R. D. Bennett, Canadian Industries Ltd. *Can. Textile J. 66,* 58, 59, 71 (May 27, 1949).

The latest recommended procedures are given for analyzing fabrics to determine the nylon content in blends with viscose, acetate, wool and cotton.

**New instrument counts picks instantly.** Anon. *Textile Industries 113,* 184 (June, 1949).

An illustrated description of the Micro-line counter is given. The instrument can be used to determine the number of warp ends and picks per inch, to check fabric construction, for estimating shrinkage after processing, etc.

## STANDARD FINISHING D

**Application of infrared heaters to textiles. I. Effect on the breaking strength, elongation at break, and the tint of undyed fabrics of wool, cotton, linen and rayon.** H. J. Selling, Vezelinstitut T. N. O., Communication No. 66, I, Delft, 1943; **II. Effect of the Philips infrared heater on some properties of various fabrics.** *Ibid,* No. 66, II.; *in Dutch.*

I.—The Philips 250 W infrared heater and its characteristics are described. Strips of various fabrics were moistened and dried with the heater at a distance of 20 cm. These were compared with strips of the same material which had been moistened and dried in air. Dry strips were also irradiated with infrared for comparison. No differences were observed in breaking strength, extension at break, and whiteness. II.—The infrared radiation had no effect on the color or the mechanical proprties of dyed fabrics. It is concluded that the heater may be used to dry dyed and printed fabrics and to accelerate condensation reactions in synthetic resins applied to fabrics. The heat is utilized effectively and the heating unit is small. It is planned to install heaters in a number of textile plants and to publish the results of these tests.

**Catalyst AC for curing resin finishes.** Anon. *Textile Age 13,* 90 (May, 1949).

Catalyst AC, a new curing agent for melamine and urea resin finishes, is briefly noted. Fabrics are given a softer hand with better resin retention and improved washfastness with Catalyst AC.

**Chemical for dyers and finishers.** Anon. *Textile Industries 113,* 199 (May, 1949).





Applications for Sequestrene, a new chemical, may be found in solubilizing and dispersing many types of dyes and pigments, preventing shade changes in dyeings as the result of trace metals, preventing spotting and reduced color yield, etc.

**Compounds without active ions; their use in the textile industry.** J. P. Sisley. *L'Ingenieur Textile 370,* 93-112 (Oct., Nov., 1948); *in French.*

The non-ionic surface-active substances are classified and their uses as wetting agents, detergents, emulsifiers, in the acid fulling of cloth, as assistants in dyeing, in the stripping of dyes, in improving the permanence of dyes, and as softening agents are noted.

**Concentration indicator for wool scouring baths.** Anon. *Textile Age 13,* 83 (May, 1949).

A new model Solu-Bridge for reading directly the concentration of soda ash solutions in wool scouring baths is briefly noted.

**Device consisting of winding cylinders with forced circulation of liquid for treating fabrics with liquids, and mechanisms for its application.** Julien Dungler. French P. 931 182, Sept. 22, 1947. (through *Bull. de L'Institut Tetile*).

The cylinders on which the fabric is passed are hollow and the liquid is forced through perforations on their surfaces by means of a pump. Several examples are given of applications to autoclaves for boiling or bleaching, equipment for washing and dyeing, and of different forms of the cylinders.

**Drimeter.** A. Fredslund Pedersen. *Tidsskrift for Textilteknik 7,* 70-3 (Apr. 1949); *in Danish.*

This is a detailed description of the Fielden Drimeter for the measurement and control of the moisture in textiles during drying.

**Drying fabrics continuously and apparatus for this purpose. Julien Dungler.** French P. 931 343, Oct. 13, 1947. (through *Bull. de L'Institut Textile*).

The fabric is passed continuously over one or several perforated cylinders into which a gaseous fluid is pumped. The velocity of the feed rollers is variable and higher than that of the perforated cylinders to avoid tension on the cloth, and a conveyor belt is used after the cylinders. Means are provided for collecting and removing the water blown from the cloth by the gas. The process could also be operated by using suction instead of compressed air.

**Drying porous materials, especially fabrics.** Jules

Tournier et Fils (S. A. des Filatures et Tissages) & Louis-Charles Cambefort. French P. 931 139, Sept. 22, 1947. (through *Bull. de L'Institut Textile*).

Finished fabrics are dried by passing an electric current through the material held between 2 plates or rollers. An electrolyte may be added to the finishing bath to increase the conductivity, if necessary.

**Dyeing esters and ethers of cellulose.** Imperial Chemical Industries. French P. 932 791, Dec. 1, 1947. (through *Bull. de L'Institut Textile*).

The fastness of dyes applied to cellulose derivatives, especially towards the combustion products of coal gas, is increased by applying to these materials before, during, or after dyeing a nitrogen-substituted diamine of the general formula $R\,R'N-(CH_2)_n-NRR'$, in which R represents hydrogen, a phenyl, ethyl, or beta-hydroxyethyl, group; R′ a phenyl group, and *n* a whole number from 2 to 6.

**Fluorescent bleaching.** A. Landolt, Ciba A. G. *Textil-Rundschau 3,* 376-82 (Nov. 1948); *in German.*

Two new "fluorescent bleaching" agents are described, one of which is suitable for "bleaching" cotton, the other for "bleaching" wool, natural silk and acetate rayon. The affinity of the 2 products for the fibers under varying conditions is illustrated by means of curves indicating the degree of brightening (the fluorescent light emitted in the visible spectrum and reflected by the treated goods). The "fluorescent bleaching" agents known today belong to different chemical groups. They are mostly colorless substances which show a bluish or violet fluorescence in solutions. Their one main difference from fluorescent dyestuffs lies in their having no color of their own. "Fluorcent bleaching" agents are of great importance for producing a pure white effect on textiles, since they make it possible to shorten the methods of bleaching hitherto employed without exerting any detrimental effect on the mechanical properties of the fibers.

**High-speed tenter frame.** Anon. *Textile Industries 113,* 191-2 (May, 1949).

Among features of a new high-speed tenter frame are completely enclosed delivery end, totally enclosed drive units, anti-friction bearings, large drive sprockets, etc.

**Improvement in rollers made of compressed fibrous material used in calenders and other finishing machinery.** Julien Dungler. French P. 924





037, Mar. 3, 1947. (through *Bull. de L'Institut Textile*).

The disintegration of rollers made of compressed fibrous materials is caused by the strong pressure exerted by metallic rollers at quite elevated temperatures on the fibrous rollers, which, because of the nature of the material, produces a highly localized concentration of heat. The improved rollers assure a uniform distribution of heat and the transmission of heat towards the central shaft. Thin pieces of conductive material are incorporated in the fibrous mass over the entire length of the roller.

**"J" piece-end sewing machine.** Anon. *Textile Age 13,* 72-4 (May, 1949).

Features of a new type "J" piece-end sewing machine for use in bleaching, dyeing, and finishing plants for sewing temporary seams for continuous processing are described. The machine will sew wet or dry fabrics up to a combined thickness of ⅜ in.

**Liquid synthetic detergent.** Anon. *Textile Industries 113,* 195, 197 (May, 1949).

Sulframin E, a modified alkyl aryl liquid is reported to be an excellent foaming and wetting agent and detergent. It is said to have exceptional hard-water and lime-soap stability and to be staple and effective in the presence of acids and alkalies.

**Machine for processing fabric piece goods, animal skins, hides, and the like.** Wm. Page & Wm. F. Short. USP 2 467 093, Apr. 12, 1949.

A machine for treating piece-goods, hides, etc. with chemicals or dyes includes a treating drum mounted on a horizontal axis beneath a floor or other support and a charging hopper movable on the floor or support to and away from the drum. A mechanism is provided for simultaneously tilting the hopper and raising the cover of the drum to permit the discharge of the contents of the hopper into the drum.

**Method of and apparatus for drying sheet materials by high-frequency electric fields.** Wallace P. Cohoe & Mitchell Wilson (to Fred'k H. Levey Co., Inc.). USP 2 459 622, Jan. 18, 1949.

An apparatus for drying paper or fabric comprises a rotatable cylinder and pairs of insulated spaced electrodes carried on the peripheral surface of the cylinder. The fabric passes over the cylinder and in actual contact with the electrodes to obtain the maximum drying effect.

**Method of treating fabrics and resulting products.** Frank H. Russell (to Pepperell Mfg. Co.). USP 2 469 245, May 3, 1949.

This invention provides a method of developing the structure and surface of a textile fabric which comprises the steps of raising a nap upon the fabric, as a backing, with the nap fibers projecting outwardly therefrom and substantially parallel to each other, bending the free ends of the raised nap fibers inwardly toward the backing, and in interlocking arrangement with adjacent nap fibers, in such reversed position, and treating the nap with a liquid dispersion of a condensed polyvinyl ester.

**New Bancroft finishes.** Anon. *Am. Wool Cotton Reptr. 63,* 99 (May 12, 1949).

A new field of finishes including durable schreinered, embossed, sculptured, textured surface, jacquard and damask effects is briefly discussed. These finishes, marketed under the trademark "Everglaze", can range from soft to crisp taffeta-like hand. The effects may be obtained on cotton, rayon, nylon, etc.

**New double layer pin stenter.** A Technical Correspondent. *Textile Recorder 66,* 58-9 (Mar. 1949).

Features of the Dalglish double layer pin stenter are described. The machine embodies all the features of the single-layer pin stenter, but occupies only half the floor space for the same drying capacity.

**New finishing machinery by Butterworth.** Anon. *Textile Industries 113,* 189 (May, 1949).

Brief notes are given on newly designed padders, known as Bullet padders, a new horizontal rope saturator, and a new rope squeezer.

**New line of Singer overedging machines.** Anon. *Textile Age 13,* 79-81 (May, 1949).

A new line of high-speed, low-cost production sewing machines, each with special equipment to facilitate the handling of certain types of overedge operations, is described.

**New line of washers developed by Cook-P & N.** Anon. *Textile Industries 113,* 210 (May, 1949).

Notes are given on a 4-tank open width processing machine, a slack washer, a 3-roll microset padder, a vertical rope squeezer, a 3-roll mercerizing padder, and a singeing machine.

**New nylon heat-setting methods.** A. W. Staudt, E. I. du Pont de Nemours & Co. *Rayon & Syn. Tex. 30,* 65-8 (May, 1949).





Methods of heat-setting nylon are reviewed in an address. Several methods of heat-setting are available depending upon the type of fabric and the purpose for which it is to be used.

**New surface active agent.** Anon. *Textile Industries 113,* 184 (June, 1949).

Surfax 1288, a wetting agent with excellent rewetting properties, is reported to have possible uses in compressive shrinkage, wetting out and dyeing hosiery, cotton, wool, etc.

**New temperature control.** *Rayon & Syn. Tex. 30,* 93 (May, 1949).

A sensitive control of steam valves developed by the Sarco Co., Inc. has proved to be of great value in meeting the rigid requirements of dyeing and finishing plants. A temperature change of ½°F sets the control in motion. Other advantages are a finger-tip temperature adjuster and an easily read built-in dial thermometer.

**Notes on finishing of fabrics made from synthetic fibers.** Emil C. Hansen. *Rayon & Syn. Tex. 30,* 77-80 (May, 1949).

The general technique of preparing and finishing fabric made from currently available synthetic man-made fibers are reviewed. Finishing processes considered are desizing, bleaching and drying as well as certain durable finishes.

**Notes on synthetic detergents.** Ethelyn Weller. *Rayon & Syn. Tex. 30,* 89-91 (June, 1949).

This is a review of synthetic detergents and their application in the textile industry.

**Possibility of washing out spots made by mineral oils and their effect on dyeing.** H. R. Hirsbrunner. *Textil-Rundschau 3,* 342-51, 382-91, 423-29 (Oct., Nov., Dec., 1948). (Through *Bull. de L'Institut Textile*).

Mineral oil spots can be removed from wool without difficulty if the condition of washing and rinsing are controlled carefully. The yellowing of wool caused by mineral oil reduces the affinity of the fiber for dyes. The condensates of fatty acids or the sulfonates of fatty alcohols used as emusifiers can affect the dyeing process. To determine the textile value of spotted fabrics it is proposed that the residual oil and residual soap be determined; that the tendency to turn yellow be examined by exposure to ultraviolet light, and that a dye-test be made. See also The Removal of Mineral Oil. *The Dyer* No. 12, 652 (Dec. 1948)).

**Process of scouring cellulosic textiles using steam.** Geo. P. Vincent & Archie L. Dubeau (to

Mathieson Chemical Corp.). USP 2 469 249, May 3, 1949.

A process of scouring cellulosic textile materials consists of impregnating the material with an aqueous caustic soda scouring liquor; subjecting it to the action of steam in a steaming zone, while impregnated; and transferring the material to a physically remote washing zone. The textile is maintained at a temperature not below 160°-180°F during the interval between the steaming operation and the washing operation.

**Removability of softeners from textiles.** H. R. Hirsbrunner. *Textil-Rundschau 3*, 342-52 (Oct. 1948); 382-91 (Nov. 1948); 423-29 (Dec. 1948); *in German.*

This is a review and discussion of the removability of mineral oil softeners from fabrics, and the influence of residual softener on the dyeing properties of the fabrics. 70 references.

**Rubber-fingered textile finishing roll.** Anthon Le Roy Ambye (to L. O. Nichols). USP 2 466 348, Apr. 5, 1949.

A finishing brushing action is necessary for such textile goods as blankets, clothing, rugs, etc., particularly when made of wool, for brushing up the nap and fluffing, to remove lint, and to effect a cleaning. A finishing roll for this purpose comprises a rotatable roll member carrying a plurality of slotted tubes lengthwise of the roll, in combination with rubber strips projecting from the slot of each tube.

**Seven tank open width machine.** Anon. *Am. Wool Cotton Reptr. 63*, 16 (June 2, 1949).

Features of a new stainless steel, seven-tank, continuous open width machine for use in crabbing fabrics and open width scouring or dyeing are briefly presented.

**Single conveyor hosiery pre-drier.** Anon. *Textile Industries 113*, 166, 169 (June, 1949).

Heavy socks may be pre-dried prior to boarding in a new single conveyor pre-drier. The wet socks coming from the dyehouse are loaded onto a 2-ft-wide conveyor and carried through a drying enclosure where controlled temperature and air circulation dry the socks to a predetermined moisture content.

**Sodium silicates in the textile industry.** Reynold C. Merrill, Philadelphia Quartz Co. *Am. Dyestuff Reptr. 38*, 428-34 (May 30, 1949).

Sodium silicates are useful in the textile industry in kier boiling and scouring operations, bleaching, weighting, sizings and coatings, dyeing and printing, fireproofing and special uses. They supply at a low cost detergent, buffering, peroxide-stabilizing, coating, adhesive and colloidal properties.



**Substitutes for soap in the textile industry.** Rinoldi. *Laniera 5*, 265-66 (1948); *in Italian.*

Attempts to substitute other detergents for soap in operations on materials of the textile industry have afforded no particular advantage. Recently the employment of substances capable of competing seriously with soap in their application to the various phases of fabrication of textiles has become universal. These products possess the advantage of being unaffected by either an acid or an alkaline reactive environment. Examples of these substances are the sulfonic derivatives of higher fatty alcohols (gardinol igepon). These find an ideal field of application as assistants in dyeing, as softeners which do not consume any part of the fiber and which may be used in highly dilute solution and even boiled without risk of dissociation. When united with soda they thoroughly clean (degrease) dirty wools especially at 50-60°C and serve for the cleansing of cotton. Subsequent bleaching may be obviated by the addition of the bleaching agent during the process of degreasing. These products are useful in the treatment of rayon and acetyl cellulose when their fibers contain linseed oil which is difficult to eliminate. Better results are obtained if they are associated with a solvent. Their employment is indicated for the treatment of woolen textiles for the purpose of softening dirty substances in order to remove them readily by washing even in hard water.

**Syntho Softener B.** Anon. *Textile Age 13*, 90, 92 (May, 1949).

Notes on a new substantive softening agent, Syntho Softener B, are given. This softener is claimed to give a soft, full-bodied, velvety hand with maximum draping qualities to cotton, rayon, acetate, Bemberg, and nylon fabrics.

**Tricot pre-setting machine developed by Avisco.** Anon. *Textile Industries 113*, 155 (May, 1949).

An illustrated description of a machine to pre-set rayon tricot fabrics is given. The machine is claimed to eliminate the necessity for tacking and untacking selvedges to prevent the setting of curl in the fabric edges during dyeing, to result in straight course lines, to prevent crow's feet and crease marks, to control the stability of the fabrics, and to give improved hand.

**Vertical retort for nylons.** Anon. *Textile Industries 113*, 149 (May, 1949).

Features of a vertical retort with fully automatic controls, designed for preboarding nylon half hose and anklets are briefly discussed.

**Washing cellulose.** John W. Allquist (to Celanese Corp of Am.). USP 2 472 877, June 14, 1949.

An improved method of washing cellulosic fibers to remove calcium magnesium, sodium and other cations normally found in industrial water and adsorbed or taken by the cellulose from the water comprises washing the cellulose with ordinary salt-bearing industrial water acidified with an inorganic acid to a pH of from 2 to 5, washing out the displaced cations and the acid with demineralized water.

**Waxes in textile processing.** Hartien S. Ritter, Pittsburgh Plate Glass Co. *Rayon & Syn. Tex. 30*, 111-12 (Apr. 1949); 84-6 (May, 1949).

The use of waxes in sizing, finishing, delustering rayon, waterproofing, dyeing, printing, mildew and moth resistant processes is discussed. Synthetic waxes are briefly reviewed.

## DYEING AND PRINTING E

### Dyeing

**Combination of wool with acids and acid dyes.** J. B. Speakman, Univ. Leeds. *L'Ingenieur Textile 370*, 53-71 (Oct., Nov., 1948); *in French.*

Some titration curves are given for HCl and $H_2SO_4$ against wool, together with curves for the "internal" pH as calculated from the Donnan equilibrium. Additional curves are given for HCl above and in the presence of KCl. for HCl in comparison with naphthalene beta-sulfonic acid, para-diphenylbenzene sulfonic acid, and acid orange G. The effect of sodium sulfate on acid dye baths was also interpreted according to the Donnan equilibrium. It is concluded that Donnan's theory of membrane equilibria furnishes a quantitative interpretation of the combination wool with simple inorganic acids and also provides precise relations between the constitution and the affinity of acid dyes. Some graphs and data are given on the rates of absorption of dyes. The variables affecting the rate of dyeing are discussed.

**Hunter has jet dye circulation kettle.** Anon. *Am. Wool Cotton Reptr. 63*, 35 (June 9, 1949).

A new piece dye kettle feeds steam into the kettle through a series of nozzles and draws water along with the steam. The dye is added in the front of





the kettle and is completely blended with the water and steam before it reaches the cloth. Uniform circulation and temperature level of the dyebath is claimed to be maintained in this new dye kettle.

**Jig dyeing and the value of housings.** Anon. *Am. Dyestuff Reptr. 38*, 442, 444 (May 30, 1949).

The principles of jig dyeing are reviewed and the advantages of enclosed jigs are discussed. The characteristics of good housings for jigs are noted briefly.

**New bagging machine.** Anon. *Textile Mfr. 76*, 193, 194 (Apr. 1949).

A new bagging machine, for joining the selvedges of cloth that have been folded lengthwise in preparation for dyeing in the length, is described. New features include an on-and-off switch which provides fingertip control, and an adjustable clutch which may be operated from any point along the length of the machine.

**New fully automatic dye jig.** A Technical Correspondent. *Textile Recorder 67*, 78-9 (May, 1949).

A brief description is given of the "Autojig", which, when coupled with a dye jig makes the machine entirely automatic. The device is contained in a 3-tier cabinet and coupled with a jig makes a self-contained unit for ensuring constant cloth speed through the dye liquor and maintaining accurately controlled cloth tension. The Autojig is manufactured by F. Smith and Co. (Whitworth, England) Ltd.

**New machines at Springfield woolen improve raw stock dyeing.** Anon. *Textile Industries 113*, 115, 117 (June, 1949).

The use of 2 600-pound capacity stainless steel pressure dye kettles is reported to have given a reduction in cost of labor and amount of materials used in dyeing and to have improved the quality of dyed stock. Other new equipment that has aided production includes a new wool drier and an overhead hoist for carrying the baskets of dyed stock directly to the drier.

**Rotary hosiery dyeing machine.** Anon. *Textile Industries 113*, 166 (June, 1949).

Features of a heavy gauge stainless steel dyeing machine for hosiery are briefly described.

**Stripping of dyes from animal fibers.** Rudolf Monch. *Textil-Praxis 3*, 25-7 (Jan. 1948); *in German.*

The procedure most frequently employed for stripping of wool dyes which entails no hazard for

the fiber material is boiling with netural salts (most commonly Glauber salt). Because of their marked resistance to chemical substances of all sorts a stripping of chrome dyes on wool is virtually impossible. Basic dyes are very readily absorbed by untreated wool and require no preliminary mordanting, therefore they can easily be stripped by treatment with acids. Degradation of acid wool dyestuffs by a reducing agent is generally simpler than degradation of cellulose dyes. Decrolins are effective as a reducing agent when employed in conjunction with formic acid. Ordinarily a combined method is utilized in the case of chrome dyes which are considerably more difficult to degrade than common acid dyes. Preliminary treatment with a soda solution is followed by immersion in a bath of decrolin. If stripping is still insufficient even after the use of this procedure an oxidizing agent (preferably chromic acid) may have to be employed. Sodium perborate is another far milder oxidizing agent but it is seldom utilized because it is quite expensive and in general fails to produce the desired result. Chromic acid or sodium perborate are efficacious as reducing agents for basic dyes and chromic acid alone in the case of vat dyes and most naphthols.

**Tensionless-continuous dye beck announced.** Anon. *Textile Age 13*, 70-2 (May, 1949).

A new attachment for any conventional dye back, which makes use of an indefinitely variable hydraulic drive and 3 reels and which makes possible continuous operation, is described and illustrated.

## Printing

**Continuous printing on fabrics or other supports by means of a rotary stencil.** Pierre Bonnard & Jean Kotas. French P. 931 679, Nov. 3, 1947. (through *Bull. de L'Institut Textile*).

The cloth is first passed under the stencil, then above a drying oven, then under the next stencil, and this procedure is repeated, according to the number of stencils used. It is then passed to a heating oven containing infrared lamps which dry the colors and fix them in the cloth. The cloth is then glazed by passing between cylinders heated at 80-120°C. This process eliminates the use of copper cylinders, dryers, etc., and the excess of dye can be recovered. About 12 colors can be printed with only 4 stencils, because of the superposition of the half tones.

**Fast screen prints on vegetable fibers.** T. F. Streng. *Textil-Praxis 3*, 118-20 (1948).



Fastness to washing is the principal property required, and is attained by the use of similar types of dyes to those used in machine printing, i.e., vat dyes, Indigosols, azoics, Rapid Fast dyes, and Rapidogens. The application of these groups of dyes is reviewed.

**Guide for the so-called a la lyonnaise printing frame.** L. J. M. Odoz & J. P. Collin. French P. 932 738, Dec. 1, 1947. (through *Bull. de L'Institut Textile*).

Guides are anchored into the wood on opposite sides of the printing frame. They carry a double longitudinal groove which makes them rigid.

**Improvements in machines for printing fabrics, paper, and other materials.** Julien Dungler. French P. 930 502, Aug. 11, 1947. (through *Bull. de L'Institut Textile*).

The printing roller consists of a hollow engraved cylinder with a conical cavity at each end containing a sleeve of the same conicity, serving as support. The 2 sleeves are mounted on a central shaft which passes through the cylinder and transmits rotary motion to it. The central shaft may be eliminated, in a modification of the device, and the cylinder supported simply on the 2 cones. These methods of constructing and mounting the printing cylinders facilitates a rapid and precise regulation of the contact surface between the printing roller and the central pressing cylinder.

**Pigmented emulsions for textile printing.** Dino Cimma, Interchemical Corp. *Papers Am. Assn. Textile Technologists 4*. 107-10 (June, 1949).

Although pigmented emulsions are used primarily for machine printings, they are employed to a considerable extent for screen printing. The advantages of pigmented emulsions in screen printing are similar to those in machine printing. The most important include the ease of application, the brightness of shade obtained with the many pigment colors, and the excellent all-round fastness properties.

**Prevention of textile printing faults.** Technicus. *Textile Recorder 67*, 85-6 (May, 1949).

The wide variety of styles and colors required in textile printing gives rise to many troubles in the application of the colors to the cloth. This is a discussion of preventive measures used to eliminate many of these faults.

**Screen printing: Principles, practice and technique.** *Textile Recorder 66*, 62-5 (Feb. 1949); 68-9 (Mar. 1949).

Subjects included in this discussion are: screen making, photomechanical screen pattern making, attaching gauze to frames, screen gauze, types of frames, and screen coatings and lacquers.

## SPECIAL FINISHING F

**Bonding cellulose surfaces.** Robt. P. Roberts & Kenneth Jones (to Celanese Corp. of Am.). USP 2 471 497, May 31, 1949.

This invention provides a process for bonding together surfaces of material composed substantially of cellulose which comprises applying to the surfaces a composition containing polyvinyl alcohol, formaldehyde and hexamethylene tetramine, bringing the surfaces together, and effecting acetalization of the alcohol by the aldehyde under the influence of heat so as to form in situ a strong bond uniting the surfaces. The method can also be used in uniting materials of cellulose to other materials, for instance cellulose derivatives, synthetic resins, leather, animal fiber and metals.

**Commercial mothproof agents.** Hans Luttringhaus, Gen. Dyestuff Corp. *Am. Wool Cotton Reptr. 63,* 10-11 (June 9, 1949).

A discussion of mothproofing agents and their action on wool is summarized. It is reported that direct treatment of wool fibers with moth repellents is more effective than the use of household methods.

**DDT impregnation of sacks for the protection of stored cereals against insect infestation.** E. A. Parkin, Dept. of Sci. & Ind. Res., Pest Infestation Lab., Slough, Bucks, England. *Ann. Applied Biol. (London) 35,* 233-42 (June, 1948).

Cotton flour sacks, jute flour sacks, jute bran sacks and jute grain sacks were impregnated with 1 and 5% by weight of DDT. Treated and untreated sacks, each containing 1 cwt of a mixture of grain (5 parts) and weatings (1 part), were exposed to severe infestation by adults of *Calandra granaria, Tribolium castaneum, Ptinus tectus, Oryzaephilus surinamensis* and *Ephestia elutella.* After storage for 15 weeks at a mean temperature of 21.3°C and a mean relative humidity of 65%, the number of adult insects in each sack were determined by sieving the contents. The results with *Ephestia elutella* were inconclusive. The results with the 4 species of beetles showed that the eventual degree of infestation of the contents of the sacks was dependent upon the closeness of weave and the DDT content of the sacking material. Impregnation of sacking with 1% of





DDT should afford adequate protection against insect infestation to clean bagged goods stored in stowages which are not heavily infested. Impregnation with 5% of DDT should offer a very high degree of protection at all times and can almost entirely prevent infestation, if the treated material is of sufficiently close weave to afford some mechanical hindrance to penetration by insects.

**Dermatitis among the public from new fabrics, dyes and finishes.** Louis Schwartz. *Chem. Eng. News 27,* 1358-60 (May 9, 1949).

No cases of dermatitis have been reported from unprocessed synthetic fibers. In most instances, dermatitis from the wearing of fabrics is caused by the finishes. The effects of waterproof finishes, flameproof finishes, delustering agents, mothproofing agents and Lousicides, antimildews, etc., are discussed. Methods of diagnosis are also reviewed.

**Durable water-repellent for woolen fabrics.** Anon. *Textile Age 13,* 90 (May, 1949).

Durable Norane W is a new durable water repellent for use on all-wool and wool blend fabrics. It also makes fabrics resistant to non-oily spots and stains and adds crease and wear resistance.

**Fabric mildew-resistance tests with organisms tolerant toward copper and mercury.** Paul B. Marsh. USDA. *Am. Dyestuff Reptr. 38,* 436, 451-2 (May 30, 1949).

Most pure-culture tests of textiles with cellulose-decomposing organisms have been carried out with *Chaetomium globosum* 1042.4 or with *Myrothecium verrucaria* 1334.2. To obtain quantitative data on the behavior of a wider range of fungi in such tests, experiments were conducted with several other organisms on treated cotton duck samples. The fabric used contained a series of different percentages of metal per unit dry weight for each of 4 different copper-organic compounds and for pyridyl mercury stearate. Of the fungi used, several gave a decidedly more severe test of the copper-containing protective agents than either of the above-named common test organisms, while certain cellulose-decomposing *Penicillium* isolates were especially tolerant toward the pyridyl mercury stearate.

**Improvement in the treatment of wool and of fabrics containing wool.** Am. Cyanamid Co. French P. 931 376, Oct. 13, 1947. (through *Bull. de L'Institut Textile*).

Wool is prevented from felting and shrinking by treating it with dispersions or solutions contain-

ing 2-15% of alkylated methyl melamine. Water is used as the dispersion medium, but it is sometimes necessary to use solvents such as alcohol. Ordinary methods of impregnation used industrially may be applied. The wool is dried and the resin is thermostabilized in the fabric by heating at 93-150°C. This reaction may be accelerated by adding catalysts such as oxalic acid, diammonium phosphate, acid methyl pyrophosphate, etc.

**Manufacture of rubber articles incorporating textile fabrics.** Geo. M. Hamilton & Chas. T. Suchy. Can. P. 447 068, Mar. 9, 1948.

A process for bonding textile fabrics to rubber, comprises vulcanizing rubber in contact with a fabric bearing a deposit on its surfaces and interstices of a bonding metal consisting of an alloy of the constituents of which is attacked by sulfur when rubber is vulcanized in contact with it and another of which acts as a diluent to control the extent of the reaction with sulfur of the first metal constituent.

**Manufacture of waterproof and water-repellent noninflammable fibrous materials.** Frederick F. Pollak & Josef Fassel. USP 2 464 342, Mar. 15, 1949.

This invention comprises the impregnation of textiles and fabrics with a solution of a melamine-aldehyde condensation product and a phosphoric acid salt of a volatile base, and the incorporation of an insoluble melamine-phosphoric acid compound into the fiber. The method may be advantageously carried out by the impregnation of the textiles and fabrics with a neutral pyrophosphoric acid salt of a volatile base, such as ammonia or a suitable amide or hydrazine, and by passing the dried or still moist materials through an aqueous condensation solution of melamine and an aldehyde, such as formaldehyde. The textiles and fabrics are hereby provided with an impregnation and coating which renders them non-inflammable, fire- and waterproof and mildewproof, and which cannot be removed by washing. This invention is an improvement on USP 2 421 218 (See TTD: *4*, 234).

**Method of flameproofing combustible cellulosic material.** Andrew McLean & Stanley F. Marrian (to Imperial Chemical Industries Ltd.). USP 2 472 335, June 7, 1949.

A method of flameproofing combustible cellulosic textile materials comprises saturating the material impregnated with a polyethyleneimine with an aqueous solution comprising 4% to 10% pentaerythritol tetra-orthophosphate, and thereafter drying the material.





**Mothproofing compound withstands cleaning.** Anon. *Textile Industries 113*, 182 (June, 1949).

Any fabric of wool or other animal fibers may be mothproofed by a new compound, Boconize, which combines chemically with the protein fiber in the fabric. Boconize is non-odorous, easily applied, and does not alter the appearance or feel of the fabric.

**"New developments in moire finishing."** Hans A. Holterhoff, Newburgh Moire Co., Inc. *Papers Am. Assn. Textile Technologists 4*, 117-23 (June, 1949).

A general description of the moire process is given and new permanent moires and new fabrics are noted. The use of the "Holterhoff Process," or the "H-Process", for the elimination of the "no-match" problem is discussed. This process not only eliminates the 2-color effect previously unavoidable in scratch moires, but is almost unaffected by the nature of the cloth, and is applicable to such new fabrics as iridescent taffetas, tissue failles and crepes.

**New low temperature method for wool shrinkage.** Anon. *Textile Age 13*, 92-3 (May, 1949).

A new process for applying Lanaset resin to wool at low temperatures is applicable to a wider range of fabrics with more exact control and less resin used. Ordinary drying equipment is adequate for curing the resin on the fabric.

**New plastic composition. Rhodiaceta.** French P. 932 092, Nov. 17, 1947. (through *Bull. de L'Institut Textile*).

Resins from an interpolyamide base are applied to layers of plasticized polyvinyl chloride attached to a base which may be natural, artificial, or synthetic textiles. Shellac gum is incorporated in the superpolyamide resins.

**Process for coating articles of glass and new products obtained.** Rhodiaceta (French P. 931 694, Nov. 3, 1947. (through *Bull de L'Institut Textile*).

Textile material made of glass filaments are coated with superpolyamides to make them more flexible and more resistant to wear. Isopolyamides (condensation products of a diamine and a di-acid, or auto-condensation products of an amino acid or its lactam) or interpolyamides (obtained from a diamine, a di-acid, and an amino acid) are used for this purpose. The operation can be carried out by using the superpolyamide in the fused state, or by extrusion, or by means of a solvent or swelling agent.

**Process for flameproofing combustible cellulosic material and product resulting therefrom.** Andrew McLean & Stanley F. Marrian (to Imperial Chemical Industries Ltd.). USP 2 470 042, May 10, 1949.

This invention provides a process for flameproofing a combustible cellulosic material which comprises impregnating the material with a polyethyleneimine and then treating the impregnated product with an aqueous solution of the reaction product resulting from the interaction of dipentaerythritol, orthophosphoric acid, and phosphorous pentoxide.

**Process for obtaining a suede effect on flexible bases made of plastic materials.** Societe Impereau (principality of Monaco). French P. 925 376, Mar. 31, 1947. (through *Bull. de L'Institut Textile*).

The process of obtaining a suede effect on plastic by the wet or dry method is simplified by using 2 cylinders to form a sheet of the plastic composition, which then goes to a table covered with fibers. These adhere to the plastic sheet, which is then passed between 2 rollers one of which is heated sufficiently to increase the adhesiveness and the plasticity. Then, while it is still in contact with this roller, another roller passes a fabric into contact with it, which adheres to its reverse side. The material thus produced passes into vulcanizing or fixing ovens, and is then coated with emery powder and brushed.

**Process for treating fibrous material with linear superpolyamides.** Tootal Broadhurst Lee Co. Ltd. French P. 931 236, Sept. 29, 1947. (through *Bull. de L'Institut Textile*).

A solution of nylon in an acid is applied to fibers such as cotton, wool, linen, silk, rayon, and the nylon precipitated on the fiber by means of an aqueous reagent which has no solvent power for nylon. Nonwrinkling fabrics are produced and wool is made resistant to shrinking and to felting by the method. It may also be used to print resist designs on fabrics.

**Progress in stabilizing rayon and nylon fabrics.** *Silk & Rayon 23*, 680, 682 (May, 1949).

Different approaches to the shrinkage problem for viscose, cotton and polymer textiles are reported.

**Protecting fibrous materials.** The Geigy Co. Ltd. Australian P. 132 125, Sept. 11, 1945.

To protect textile and other fibrous materials against insects and/or fungi, the materials are treated with an aqueous emulsion containing an insecticide or fungicide, or both, as the disperse phase, and also a cationic emulsifying agent.



**Rendering fabrics impermeable.** Frederico Werner. French P. 927 828, May 12, 1947. (through *Bull. de L'Institut Textile*).

The fabric is immersed in a bath containing synthetic resins (polyvinyl resins, for example) prepared by mixing the finely pulverized resin with a suitable plasticizer. It is then dried at the required temperature (150-180°C for polyvinyl resins).

**Resin finishing of textile fabrics.** Robt. G. Thomas, Rohm & Haas Co. *Am. Dyestuff Reptr. 38*, 413-6 (May 16, 1949).

The use of resins in textile finishing is discussed with reference to thermoplastic and thermosetting resins and the future of resin finishing.

**Shrinkage control of textiles.** John E. Lynn & Linton A. Fluck, Jr. (to Am. Cyanamid Co.). USP 2 466 457, Apr. 5, 1949.

Spun, woven, knitted and felted textiles as well as the raw materials such as loose wool, staple cotton fibers, etc. from which they are prepared can be rendered resistant to felting and shrinkage by impregnating the textiles with an aqueous dispersion of a curable methylated methylol melamine and a formaldehyde-binding substance selected from the group consisting of urea, thiourea, and their mixtures. The impregnated textiles are then heated to dry them and cure the methylated methylol melamine to a water-insoluble condition. The treated textiles have a tensile strength not substantially less than the strength of the corresponding untreated textiles.

**Some aspects of the chemical control of wool shrinkage.** John M. Gould, Barre Wool Combing Co., Ltd. *Am. Dyestuff Reptr. 38*, 407-10 (May 16, 1949).

This is a review of wool shrink resistant treatments with special reference to the Harriset process.

**Some developments in the treatment of cotton.** Georg Heberlein (at a conference held at the Institute Textile de France on July 29, 1948). *Bull. de L'Institut Textile 11*, 21-34 (Apr. 1949); *in French.*

This is a lecture on methods of improving the qualities of cotton textiles by various chemical treatments, such as esterification, mercerization, acid processes etc. It is based largely on the patent literature but no references are given. Some electronic photomicrographs of cotton subjected

to various treatments were exhibited and the differences in external structure pointed out.

**Some problems arising in the application of statistics to non-shrinkability tests.** E. G. Carter. International Wool Secretariat, London. *L'Ingenieur Textile 370*, 73-91 (Oct., Nov., 1948); *in French.*

The problem of sampling is analyzed, the testing apparatus is examined statistically, and the control of quality is discussed. Data are given on the effect of various finishing agents and on the results of washing tests on knit fabrics. It was found that simply rubbing the soapy samples in the hands did not give shrinkage results as accurate as those obtained in the testing apparatus. The author concludes that analyses of the kind described should be made to make sure that the tolerances permitted are adequate and reasonable before any contract containing specifications is negotiated.

**Suede fabric and its manufacture.** Pneumatiques Dunlop. French P. 932 487, Nov. 24, 1947. (through *Bull. de L'Institut Textile*).

By a heating process, textile fibers or similar material are deposited and fixed in almost vertical positions on an adhesive covering a woven textile such as gabardine, calico, or buckram. The adhesive is then converted to a gel with a smooth, non-adhesive surface by heating for a short time. It does not become adhesive again on heating or under the effect of oil. The adhesive used is a mixture of vinyl polymers and a plasticizer. A paste composed of polyvinyl chloride mixed with dibutyl phthalate may be applied to the fabric. The suede fabric thus produced is compact and flexible. It is especially suitable for forming the uppers of shoes and slippers.

**Textile treatment with alkali-zincate solutions of cellulose ethers.** Sidney M. Edelstein. USP 2 465 520, Mar. 29, 1949.

A method of treating textile materials consists of applying to the material a solution of a cellulose ether in an aqueous solution of an alkali metal zincate so as to form a film of solution on the material. The cellulose ether is precipitated on the material by applying a solution of sodium hydroxide of mercerizing strength. The product is then washed and dried. Fabrics treated in this manner are claimed to show more stiffness and greater fastness of the precipitated cellulose ether on the fabric.

**Treatment of cellulosic textile material.** Harold W. Stiegler & Linton A. Fluck, Jr. (to Am. Cyanamid Co.). Can. P. 446 963, Mar. 2, 1948.



A process for rendering cellulosic textile fabrics resistant to shrinking comprises impregnating said fabrics with 2 to 8% by weight of a water-soluble methylated methylol-melamine in the form of an aqueous solution and thereafter drying the fabric and curing the methylated methylol-melamine whereby it is rendered substantially water-insoluble.

**Treatment of cellulosic textiles with strong hydroxide and acrylonitrile.** Jas. W. Stallings (to Rohm & Haas Co.). USP 2 473 308, June 14, 1949.

This invention provides a process for increasing abrasion resistance, stiffness and tensile strength and decreasing moisture absorptivity by impregnating the cellulose material with a 10-30% aqueous solution of a strong hydroxide, removing the excess solution and immersing the treated material in 5-50% solution of acrylonitrile in an inert water-immiscible organic solvent.

**Treatment of textile materials.** Donald H. Powers & Elmer H. Rossin (to Monsanto Chemical Co.). USP 2 469 407, May 10, 1949.

A substantially permanent stiffened finish on fabrics which cannot be appreciably removed by ordinary washing operations and is substantially free of dusting is produced by a method which comprises treating the fabric with an aqueous solution of alkylene polyamine and a salt of copolymerized styrene maleic anhydride selected from the group consisting of ammonium salts and amine salts, the polyamine being added in amounts varying between 5 and 30% on the weight of the salt, and then drying the fabric, whereby the treating agents react to form an insoluble resin on the fabric.

**Treatment of textile material.** Donald H. Powers & Elmer H. Rossin (to Monsanto Chemical Co.). USP 2 469 408, May 10, 1949.

A substantially permanent stiffened finish on fabrics which cannot be appreciably removed by ordinary washing operations and is sustantially free of dusting, is provided by a method which comprises treating the fabric with an aqueous solution of an ammonium salt of copolymerized styrene-maleic anhydride and a water-soluble alkyl either of methylol melamine, the salt being deposited on the fabric in amounts varying from 2 to 15% by weight, the ether being added in amounts varying between 2 and 20% on the weight of the salt, and then drying the fabric, whereby the treating agents react to form an insoluble resin thereon.

**Treatment of textile materials.** Donald H. Powers & Elmer H. Rossin (to Monsanto Chem. Co.). USP 2 469 409, May 10, 1949.

A substantially permanent stiffened finish on fabrics which cannot be appreciably removed by ordinary washing operations and is substantially free of dusting, is produced by a method which comprises treating the fabric with an aqueous solution of a substance selected from the group consisting of formaldehyde and water-soluble polymers of formaldehyde and a salt of a copolymer prepared by copolymerizing a substance selected from the group consisting of styrene and substituted styrenes with a substance selected from the group consisting of maleic anhydride and partial esters of maleic anhydride, the salt being selected from the group consisting of ammonium salts and amine salts, and being deposited on the fabric in amounts varying from 2 to 15% by weight, the substance being added in amounts varying between 1 and 20% on the weight of the salt and then drying the fabric, whereby the treating agents react to form an insoluble resin on the fabric.

## TESTING AND MEASUREMENT G

**Easier grade determination in wool top.** Elroy M. Pohle & Werner A. Mueller. USDA. *Textile Research J. 19,* 278-82 (May, 1949).

This is a discussion of sequential sampling in the determination of the grade of wool top, which minimizes the sample sizes. The method should result in considerable time saving in conducting fineness tests and wool grade variability determinations.

**Some interesting applications of pH and spectrophotometric control in textile and dye operations.** E. H. Haller & M. H. Odeen, Natl. Technical Laboratories. *Am. Dyestuff Reptr. 38,* 411-12, 416 (May 16, 1949).

This is a review of electrometric pH meters and spectrophotometers. The instruments used by the authors were: Beckman pH meters, the Beckman Quartz Spectrophotometer (Model DU), the Beckman Model B Spectrophotometer, and the Beckman Flame Spectrophotometer. Some of the applications of these instruments in textile work and their advantages are discussed.

**Use of probability paper for estimating the mean and standard deviation of normally distributed textile test data.** John D. Tallant, Southern Regional Res. Lab. *Textile Res. J. 19,* 270-3 (May, 1949).





The use of probability paper for rapidly estimating the mean and standard deviation of normally distributed textile test data has received but little attention. This paper demonstrates the use of this paper as a tool for the rapid and reasonably accurate evaluation of such data, especially when a large number of observations are made. The method is applicable to any set of data which is approximately normal in distribution.

## Clothing and fabrics G 1

**Capacitance method of measuring wear of textile materials.** Anon. *Textile Age 13,* 50, 52-3 (May, 1949).

A simple, rapid, highly sensitive, and nondestructive method for measuring the abrasive wear of textiles involves the measurement of capacitance. The method consists of first measuring the capacitance of the intervening air space between the electrodes of the capacitor and the specimen. The capacitance with the unworn specimen between the electrodes is next obtained, and finally the capacitance of the abraded specimen is measured.

**Effect of abrasion on breaking strength and elongation of fifty-eight clothing fabrics.** Evelyn E. Stout & Majorie Bell Moseman, Wash. Agri. Exp. Sta. *Am. Dyestuff Reptr. 38,* 417-19 (May 16, 1949).

The effect of abrasion on breaking and elongation was studied on 58 clothing fabrics of cotton, rayon, wool, rayon-cotton, rayon-aralac, rayon-wool, and rayon-nylon. All fabrics were purchased from retail stores in Washington and were abraded a maximum of 500 strokes. Breaking strength and elongation determinations were made in warp and filling directions after each 100 strokes. Cottons proved to be no better than rayons in resistance to abrasion; some rayons were much improved since the war years. The wool and the mixed-fiber fabrics, except for rayon-cottons, withstood abrasion better than other fabrics studied. Rayon-wool and rayon-nylon twills proved superior to all other fabrics studied in several respects. Percentage of elongation decreased steadily with increased abrasion in all fabrics, with the exception of 2 fabrics in which percentage of elongation increased after the first 100 strokes, then decreased comparably to the other fabrics. Although withdrawn from further study because of abrasion-worn holes, fabrics still possessed considerable breaking strength as indicated by the Scott tensile strength tester. Mixed-fiber fabrics seem to offer many

possibilities satisfactory for use where abrasion is a wearing factor.

**Measurement of the effective pore size and of the water-repellency of tightly woven textiles.** F. E. Bartell, W. R. Purcell & C. G. Dodd. *Discussion of the Faraday Soc 3,* 257-64 (1948).

This paper describes methods by which the 2 important properties of water-resistant vapor-permeable fabrics can be quantitatively determined.

**System for the sizing of women's garments.** M. L. Staples & D. B. DeLury, Ontario Research Foundation. *Textile Research J. 19,* 341-54 (June, 1949).

Body measurements for a representative number of American women (over 10,000) were analyzed and a system is proposed for the sizing of women's garments based on this analysis. Size classes for the entire population of women 18 years of age and over were developed in terms of independent control dimensions which are essential for the proper fit of the particular type of garment considered. Dimensions were computed for standard forms set up to represent each size class of the population. A scheme for identifying the different size classes is also proposed.

**Standard soiled fabric samples available.** Anon. *Textile Industries 113,* 199, 201 (May, 1949).

A brief note is given on standard soiled cotton fabrics, prepared by a group at Pennsylvania State College.

**Standardized soiled fabric for testing.** Anon. *Textile Industries 113,* 125 (May, 1949).

A brief note is given of a standardized soiled fabric for use in detergency tests on both cotton and wool fabrics, developed by the United States Testing Co., Inc. The fabrics are soiled by immersion in a solution of mineral and vegetable oils in which colloidal carbon black is suspended. After soiling, the fabrics are heat-treated to accelerate the ageing process.

**Tests of the permeability of fabrics to biting by mosquitoes.** J. P. Linduska & Fred A. Morton, USDA. *J. Econ. Entomol. 41,* 788-94 (Oct. 1948).

Of 56 fabrics tested in the laboratory to determine their permeability against biting by mosquitoes, 9 allowed fewer than 1% of the mosquitoes to penetrate, and most of the others appeared acceptable from other standpoints for use as protective clothing. Field tests of a number of these fabrics substantiated results found in the laboratory. Suits of Byrd cloth, nylon-filled poplin, Jo





cloth, heavy nylon, and one style of cotton twill were found to provide a high measure of protection against biting by mosquitoes. Herringbone twill, a fabric commonly used in fatigue uniforms, was only slightly resistant.

## Instruments and instrumentation G 2

**Automatic computation of the standard deviation.** F. H. Germans, Vezelinstitut T. N. O. *Nature 163,* 25-6 (Jan. 1, 1949).

This is a brief description of apparatus used at the Vezelinstitut T. N. O. Delft (Holland) for determining the mass per unit length of textile materials such as yarns, roving, slivers and tops. Mass per unit length, in this case, is by preference expressed in terms of standard deviation. The apparatus used consists of 2 parts, one of which is used for the correct transformation of the variations of mass between the feelers into electric currents and may consist of any sensitive system. The second is a device for additive registration which consists of 3 parts: (a) a vacuum photoelectric cell; (b) a capacitator; and (c) an electrostatic voltmeter. A circuit diagram is given and the operation of the apparatus is described briefly.

**Beta-ray thickness gage.** Anon. *Textile Age 13,* 85-6 (May, 1949).

The beta-ray thickness gage is designed to measure continuously the thickness of sheet materials. The instrument measures the amount of beta-rays absorbed by the material, indicating the mass per unit area.

**Comparison of fiber tensile values obtained on the Pressley Tester and Scott IP-4 at different test speeds.** J. K. Phillips. *Textile Research J. 19,* 274-7 (May, 1949).

A comparison was made of fiber tensile values obtained on the Scott IP-4 machine and the Pressley Tester at their normal test speeds and also at comparable test speeds. The effect of elapsed time to break on the strength of fibrous materials was shown to be very great at the test speeds normally used on the Pressley Tester as compared to those on the Scott IP-4 machine.

**Determining starch viscosity.** W. G. Bechtel. Corn Industries Research Foundation. *Textile Industries 113,* 92-4 (June, 1949).

The Corn Industries viscometer, designed especially for testing starches, tests the starches in the concentration range of their intended use. All conditions in cooking the pastes are automatically controlled so that tests are readily duplicable.

Types of tests for which the viscometer is suited are studies of the effect of various adjuncts used in textile sizes, enzyme conversions, different pH values, concentration of starch, and temperature of cooking and of use. Operation of the viscometer is described.

**Dynamic studies of carpet resilience.** J. L. Barach, Alexander Smith & Sons Carpet Co. *Textile Research J. 19,* 355-62 (June, 1949).

The development of a method and instrument for measuring the energy absorption ability of different types of carpet is described. The instrument is essentially a free falling weight, with a means for indicating the position of the weight as a function of time. A Schaevitz differential transformer, the output of which is a linear function of the position of a movable core, and an oscillograph comprise the recording mechanism of the instrument. The author concludes that with revision of the instrumentation the method is practical, and that even in its present form it is possible to measure differences between carpets of different constructions.

**Identification of insect damage on wool.** R. Zinkernagel. *Textil-Rundschau 3,* 268-71 (Aug. 1948) ; *in German.*

A microscopic technique has been developed for determining the type of insect responsible for damage from the nature of the damage to the wool fiber itself. Illustrations.

**Improved single-unit Schiefer abrasion testing machine.** Herbert F. Schiefer, Lawrence F. Crean & John F. Krasny. *Textile Research J. 19,* 259-69 (May, 1949) ; *J. Research Natl. Bur. Standards 42,* 481-97 (May, 1949).

An improved single-unit Schiefer abrasion testing machine was developed. It can be adapted for testing a great variety of materials under a wide range of test conditions. Different types of specimen holders and abradants can be used with the machine. Both the pressure and the tension on the specimen can be fixed at selected values and maintained constant throughout the test period.

**Knit shrinkage gauge.** Anon. *Textile Industries 113,* 175 (June, 1949).

A new knit shrinkage gauge serves to measure the force necessary to restore a given area of fabric to any predetermined percentage of tolerable shrinkage. The gauge consists of an inflatable diaphragm in which is set a circle of sample mounting pins, an air pressure and measuring system, and an automatic trigger gauge to release the air





pressure when a predetermined sample dimension has been reached.

**Measurement of twist in yarns with the Torsiograph.** J. LeLong. *L'Indcstrie Textile 64,* 117-18 (June, 1947).

A new apparatus manufactured by the Etablissements Defraine of Brussels is described and illustrated. The yarn is untwisted by means of a small hand crank. This crank is connected by gears to a cylinder covered with millimeter paper. The point at which the yarn is untwisted is registered on the paper by means of a crayon. The crank is then turned backward to restore the original twist. A semiautomatic movement of the 2 clamps replaces the section of yarn examined by a neighboring section and the measurement is repeated. A lens and a light are used to examine the section of yarn under investigation. The diagram so produced shows the irregularities of twist as well as the average twist. An operator with a little training can determine 50 points on the diagram in 5 min.

**Method of evaluating the elastic properties of knitted fabrics.** Hazel M. Fletcher, Arnold M. Hansen & Mary Ellen Duensing, USDA. *Textile Research J. 19,* 94-6 (Feb. 1949).

A device is described which was designed and built primarily for evaluating the visco-elastic behavior of knitted fabrics. The apparatus can be used in measuring the stretch and elastic recovery of knitted materials in either the lengthwise or crosswise direction or in both directions simultaneously when various loads are applied. With the new device it is possible to determine the combined instantaneous and delayed recovery.

**New apparatus for the measurement of irregularities of sliver, roving, and yarn.** *Textielwezen 5,* 69-70 (May, 1949) ; *in French.*

The "Uster" apparatus, developed by Zellweger at Uster (Zurich, Switzerland) is described and illustrated. It contains 2 high-frequency oscillators, the frequencies of which are superposed. One of these oscillates continuously on the same frequency, independent of the measurement, and the frequency of the other oscillator varies with the transverse section of the material. The material is passed through an instrument resembling a comb which measures directly the capacity of the second oscillator.

**Performance data on Uster evenness tester.** Anon. *Textile Bull. 75,* 75-7 (Apr. 1949).

Features of the Uster evenness tester are de-

scribed briefly. The instrument is available in 2 types, Type A for use with material 83 grains per yd. of sliver up to 150s yarn, and Type B for use with sliver of 350 grains per yd. to 150s. Material may be tested at the rate of 1, 2, 4, and 8 yds. per min.; the recording chart may be operated at speeds of 1, 2, and 4 in. per min. Graphs obtained by running material through the machine several times coincide very closely.

**Simple and easily made gristing balance.** H. McMorran, Scottish Woollen Technical College. *Textile Recorder 66,* 56 (Mar. 1949).

A brief note describes the construction and operation of a balance for use in determining yarn count when only short lengths of yarn are available, as in cloth analysis. A drawing of the device is also given.

**Simple objective colorimeter with special filters.** R. W. Asmussen & B. Bachmann-Olsen. *Tidsskrift for Textilteknik 7,* 57-60 (Apr. 1949); *in English.*

(Report No. 34 from the Danish Inst. for Textile Research). The theory and design of a new objective colorimeter are described briefly. The instrument is designed for relative colorimetry, and for this purpose is provided with a series of light filters made by the Am. Corning Glass Works. The spectral transmission curves of these filters have been measured and are presented.

**Standardization of cordage.** Anon. *Bull. de L'Institut Textile 10,* 153-6 (Apr. 1949); *in French.*

This is an account of the development of standards for hawsers and tow lines, rope strands, cords, twine, and marine cordage. The work was made possible by the collaboration of the Commission Technique du Syndicat Général des Corderies et Ficelleries Mecanique de France and was presented by the Institut Textile to the I. S. O. Congress at Buxton in June, 1948 as a basis for international standardization of cordage.

**Strain-gage system for fiber testing.** S. Leonard Dart & L. E. Peterson. *Textile Research J. 19,* 89-93 (Feb. 1949).

A precision instrument for the measurement of stress-strain-time properties of textile materials, which was constructed in the research laboratory of the American Viscose Corp. is described. Classification of this instrument as a research tool rather than as a routine testing instrument allows more flexibility in operating conditions. It is of the constant-rate-of-extension type, for use on all textile materials from single filaments to fabrics.





The instrument consists essentially of a constant speed drive, a Statham gage, and a Brown recording potentiometer.

**Temperature measurements of moving textile material.** C. W. Bowden, Jr., Minneapolis-Honeywell Regulator Co. *Textile Research J. 19,* 342-5 (June, 1949).

A temperature measuring device which does not require physical contact between the goods and the detecting element is described. Radiation of heat from the object whose temperature is to be measured is focused by a calcium fluoride lens upon a group of small thermocouples which create a minute voltage. A potentiometer receives this voltage and amplifies it to operate a recording pen and, if control is included, to actuate a controlling means—such as a mercury switch. To eliminate the effects of ambient temperature at the thermopile, a temperature-sensitive resistance winding and a heating element are included in the radiation detecting unit. Thus the unit is responsive only to radiation focused upon its thermopile.

**Tensometer for measurement of the peeling force of multi-ply textile fabrics.** S. L. Anderson. *J. Sci. Instruments 26,* 153-4 (May, 1949).

An instrument is described which gives a record of the force required to separate 2 layers of pliable material cemented together, at peeling velocities from 0.05 to 17 mm./min. for forces up to 10 kg. Some results are given for a 2-ply rubberized fabric on which tests have been made at higher velocities on a ballistic machine. These results show a linear relation between peeling force and logarithm of peeling velocity over a range of 0.05 to $10^5$mm./min.

**Testing device for filamentary material.** David Taylor & Ernest R. Ward (to Celanese Corp. of Am.). USP 2 472 927, June 14, 1949.

This patent describes a tensile strength tester for yarns incorporating the principles of the chainomatic balance for furnishing the breaking load. The machine is hand operated and determines breaking strength and elongation of yarns. A novel feature is the use of the principle of the oil plunger and hydraulic cylinder to regulate the rate of loading.
HAM

**Uniformity meter developed by ITT.** Anon. *Textile Bull. 75,* 77 (Apr. 1949).

The Institute of Textile Technology has developed a uniformity meter for measuring the uniformity of yarn, roving, sliver or other filamentary ma-

terial. The instrument may be calibrated to operate equally well on all types of fibers. By use of the dielectric principle, material is measured in terms of weight per unit of length. Roving and sliver are generally run at 3 to 6 in. per sec.; yarns have been run successfully at speeds as high as 60 ft. per sec. A recorder produces a continuous graph or chart which gives an accurate profile of the degree of uniformity of the material being tested. Results are reproducible to a high degree.

**Water absorbency apparatus.** E. C. Jackson & E. R. Roper. *Am. Dyestuff Reptr. 38,* 397-401 (May 16, 1949).

An apparatus for measuring the water absorbency of fabrics is described. The apparatus is based on an earlier development by Ketterring ("The Determination of Rate of Water Absorption of Light Weight Cotton Fabrics," (*Am. Dyestuff Reptr. 37,* 73-5 (1948); see TTD: *5,* 307), but has been modified somewhat to permit its use for a wider range of fabrics of different absorptive powers. Measurements are obtained from a capillary measuring tube, calibrated for grams of water per unit length, the distance the meniscus moves in the measuring tube indicating the amount of water absorbed.

## TEXTILE MILLS H

**Bale clamp for lift truck.** Anon. *Textile Industries 113,* 201 (May, 1949).

A new bale clamp attachment for lift trucks picks up, handles, transports, and stacks large bulky bales of cotton, wool, waste, etc.

**Bale press.** Sam Y. Taylor (30% to F. J. Herbelin & 30% to Wm. F. Neale). USP 2 465 496, Mar. 29, 1949.

A baling press for cotton and other fibrous material is provided for forming a bale from a continuous bat of material on a core. The press consists of a means to receive and rotate the core, a plurality of pairs of spaced pressure rollers to compress the bat of material being wound, a carriage for each pair of rollers, a cam and leverage means to urge each carriage and its rollers against the bale with a predetermined pressure, and means for controlling the position of the carriages allowing them to retract as the bale increases in size.

**Clamp truck speeds handling of cotton bales.** Anon. *Textile Industries 113,* 195 (May, 1949).

A new clamp truck utilizing hydraulically operated clamp arms is designed to provide fast, convenient handling of cotton bales, etc.





**Fork-trucks cut handling costs.** W. J. Lawrence. *Textile Industries 113,* 123, 125 (May, 1949).

The use of fork-trucks in the movement of materials, stacking operations, etc. has been found to save labor, time, expense, and storage space in a woolen mill (Chatham Mfg. Co.). The use of special attachments such as pallets, scoup attachments, etc. increase the usefulness of fork-trucks; heavy materials may be moved more safely, eliminating possible injury to operatives.

**Hoover's modern Concord plant.** Anon. *Textile Industries 113,* 155-6 (June, 1949).

Features of a modern hosiery mill (Hoover Hosiery Co.) are discussed, including construction, lighting, employee facilities, air conditioning, knitting equipment, steam generators, etc.

**Laying out a modern plant to dye utility viscose rayon fabrics.** Arthur R. Wachter( Am. Viscose Corp. *Textile Age 13,* 7, 10, 12, 16, 18, 22 (May, 1949).

The layout and machinery for an ideal dyeing plant, planned for continuous production with a minimum of materials handling are described. The design is planned to permit expansion without interfering with the assemblyline flow. Details of construction are also discussed.

**Magnesium's contribution to the textile industry.** Anon. *Textile Industries 113,* 112-14 (May, 1949).

The use of magnesium in machine parts has been found to increase production speeds and efficiency in the textile industry. Some applications and advantages of magnesium in beams and spools, portable storage bins, weaving and knitting are described.

**Modern installations for provision of heat in the textile industry.** W. Sennhauser. *Textil-Rundschau 3,* 118-24 (Apr. 1948); *in German.*

While steam has hitherto been utilized as a medium for the transmission of heat in the textile industry, the system of a closed circuit of superheated water is at present widely employed because of the advantages which it offers. A combination of installations has been developed for the accumulation of superheated water and also of hot water which, by rendering it possible to accumulate surplus electric power intended for thermic requirements, compensates in great measure for fluctuations in the need for heat and makes possible a more economical use of boilers. Reclamation of heat from residual liquors in connection

with dyeing and bleaching and has produced good results in different establishments. Problems involved in the dispersion of fumes should be studied especially. The heat pump has been applied successfully where certain technical problems of heating had to be solved. The combination of a heat pump with an installation for cooling of water and for reclamation of heat from escaping gases, all operated by a diesel motor, may produce interesting results.

**Soil conditioner produced from industrial wastes.** Anon. *Chem. Eng. News 27,* 1872 (June 27, 1949).

Plans to license approximately 40 plants throughout the U. S. to convert organic industrial wastes to a soil conditioner known as Humex are being worked out by Greengrow, Inc., a firm privately owned by Borden Mills, Inc., and Green Textile Associates. The method of licensing consists of providing and installing for the licensee, who supplies the land and building, the necessary machinery at an approximately cost of $25,000. Operators are trained and the plant set in operation by Greengrow, after which that firm receives a royalty amounting to about 5% of the sales price of the product. A plant to employ the process was recently installed to handle the waste products from textile mills in New York and New Jersey, producing about 100 tons of the soil conditioner daily. A plant in Spartanburg, S. C., has been operating for approximately a year, using waste from Carolina Fibre Mills, and is reported as proving "highly successful." The product is wrapped in cellophane packages for retail distribution and is used in the same manner as fertilizer.

**Some applications of statistical methods in the cotton industry.** A. W. Bayes, Chief Engineer of Ashton Brothers, Leeds. *L'Ingenieur Textile 370,* 37-51 (Oct., Nov., 1948); *in French.*

It is to be expected that the methods of statistical analysis will make observation more objective so that they become simple routine work instead of requiring the personal attention of experienced workers. A number of examples of how statistical analysis may be applied to the variables involved in spinning and weaving are given. The author expresses the opinion that these methods can go a long way towards demonstrating that the traditional mysteries of textile production have a logical basis which can be studied and comprehended by rational beings.

**Spontaneous ignition of oiled textiles.** M. Kehren.





*Textil-Rundschau 3,* 409-17 (Dec. 1948); *in German.*

The hazard of fire afforded by textile materials oiled with self inflammable products is discussed. Behavior on the fiber of products employed for oiling depends primarily on their chemical constitution. Only compounds such as linolic and linolenic acids and fats derived therefrom, permitting more than one double bond per molecule chain, are subject to autoxidation. The mechanism of the reaction is described. The heat which is released, even if it be insufficient to ignite the fibers, impairs their quality and especially their stability. The method proposed by Mackey is recommended for the examination of products used in oiling with respect to their autoxidability. Products which, on examination in the apparatus, cause the temperature to rise above 100°C should be rejected for oiling. Mineral oils free from double bonds would be ideal in this respect if they did not present difficulties in washing. Autoxidation of unsaturated oils is subject to catalysis. Traces of metallic soaps originating from iron of containers or of chrome from dyeing baths may render dangerous products which by themselves alone would not produce heat. Conversely certain organic compounds soluble in oils (beta-naphthol, hydroquinone, etc.) are capable of preventing or of retarding their autoxidation. However, these so called stabilized products should be suspected. In order to avoid all risk of fire it is best to be familiar with the precise composition of products employed for oiling, to limit their amount to strict necessity and not to store oiled material in compact bales.

**Wehadee's versatile dye plant.** Anon. *Textile Industries 113,* 115, 117, 119, 121 (May, 1949).

The construction, dyeing and bleaching machinery, Precipitron air cleaner unit, water supply, drainage, heating system, materials handling, laboratory, and lighting of a modern dye plant are described.

## CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

**Assay of cellulolytic activity of molds isolated from fabrics and related items exposed in the tropics.** W. L. White, Richard T. Darby, Gladys M. Stechert & Kathryn Sanderson, Phila. QM Depot, Phila., Pa. *Mycologia 40,* 34-84 (Jan.-Feb. 1948).

Results are reported of a series of assays to determine roughly the cellulolytic activity, as meas-

ured by decline in tensile strength of cotton fabric, of certain fungi isolated from textiles and related materials deteriorated in the tropics. The total number of assays was 584. These represent 453 cultures distributed among 45 genera.

**Black Aspergilli in relation to cellulosic substrate.** W. L. White, R. G. H. Siu & E. T. Reese, QM Res. & Dev. Lab., Phila., Pa. *Bull. Torrey Bot. Club 75,* 604-32 (1948).

None of the truly black Aspergilli can attack cellulose, but there are the *A. niger* group 2 light colored forms which are cellulolytic. Emphasis in this paper has been on the purple brown forms of the *A. luchuensis* series. These organisms can attack grey cotton duck, but not 3.3 oz. cotton sheeting, nor ground filter paper. The reasons for these differences have not been worked out but it has been demonstrated that yeast extract may substitute for some of the impurities in cotton duck which favor growth.

**Certain variations in the structure and properties of natural cellulose fibers.** Earl E. Berkley, USDA. *Textile Research J. 19,* 363-7 (June, 1949).

This is a well illustrated review of the structure of natural cellulosic fibers and the effect of the structural characteristics on physical properties such as tensile strength, stiffness and spinnability.

**Chemical damage to non-protein textile fibers.** R. F. York. *Textile Recorder 67,* 82-4 (May, 1949).

The degradation of non-protein textile fibers is discussed with reference to the chemical degradation occurring in scouring, bleaching, dyeing and finishing. The determination of degradation and the prevention of degradation are also discussed. The degradation of cellulose is considered primarily.

**Chemistry in textile processing.** W. E. Prentice, Kenwood Mills Ltd. *Can. Textile J. 66,* 44-5 (May 13, 1949).

Chemistry is applicable to all textile processes including wool scouring, dyeing piece and stock—carding, spinning and finishing. The role of chemistry in these various processes is discussed briefly.

**Chromatic identification of textile fibers and synthetic resins containing tertiary amines.** M. Palumbo. *Ann. Chim. Applicata 38,* 519-24 (Sept. 1948); *in Italian.*

Results obtained with employment of a chromatic reaction of tertiary amines for identification of





textile fibers and of synthetic resins containing tertiary amines are described. In the course of these experiments it was demonstrated that the chromatic reaction renders it possible to contribute to the knowledge of the morphological chemical constitution of wool and to the analytical classification of the various types of nitrogenous synthetic resins on the basis of their chemical constitution.

**Determination of cellulose by acid-dichromate oxidation.** Leon Segal, Rita C. Tripp, Verne W. Tripp & Carl M. Conrad. *Anal. Chemistry 21,* 712-18 (June, 1949).

A study of the technique of Kettering and Conrad for the volumetric acid-dichromate determination of cellulose in cotton fiber was made with a view to accounting for the lower than theoretical cellulose values obtained.

**Determination of cellulose in cotton and cordage fiber.** Lyle E. Hessler & Geo. V. Merola, USDA. *Anal. Chemistry 21,* 695-98 (June, 1948).

The effect of alcoholic amines in ethylene glycol was explored as a means of determining cellulose in cotton and cordage fibers. The action of the reagent on hard and soft fibers shows promise as a method for determining cellulose, but in some cases the fiber may require some bleaching. Comparisons of the action of various cellulose reagents on cordage fiber are given.

**Diffusion of moisture and heat through textiles.** P. S. H. Henry. *Discussion of the Faraday Soc. 3,* 243-57 (1948).

This paper is concerned with developing the conclusions drawn in a previous paper on the phenomena shown by 2 coupled diffusion processes—in this case, those of moisture and heat through a porous absorbent body such as cotton in bulk. It is shown that simplifications can be made to the equations where the coupling is very weak or very strong, where the 2 elementary diffusions occur at different rates or where attention is confined to disturbances in one variable only. Nomograms are provided to simplify numerical treatment. The theory is applied to the case of compressed cotton fibers over a range of temperatures and humidities and at 2 values of package density.

**Effect of various surface-active agents on the penetrating power and stability of calcium hypochlorite and bleaching powder solutions.** John T. Scanlan, A. J. Stirton, Daniel Swern & Edw. T. Roe, Eastern Regional Research Lab. *Am. Dyestuff Reptr. 38,* 455-8 (June 13, 1949).

Methods are described for preparing clear, aqueous solutions of maximum oxidizing power from commercial hypochlorite and from bleaching powder. The effect of 130 commercial surface-active agents on the penetrating power and stability of the solutions was determined. The Draves-Clarkson test was used for the determination of penetrating power.

**Electronoptical studies of fine structure of gels.** K. Muhlethaler. *Makromolek. Chem. 2,* 143-71 (Aug. 1948); *in German.*

1. Vanadium pentoxide gel.—With the aid of electronoptical photographs it is possible to obtain a clear picture of the structure of reticular dispersed colloids. It is shown that gels are characterized by a cohesive micellar framework whose meshes communicate openly with each other. The ramifications and fusions of divergent and convergent skeins are distinctly visible. 2. Mucilage. —Fine skeins of approximately 100 Å in thickness were demonstrated in the epidermal mucilage of quince seeds. From analogy to other seed mucilages which cellulose fibers (*Cobaea scandens,* for example) contain, it may be concluded that these skeins represent the chemically demonstrated cellulose of quince mucilage. 3. Cellulose bacteria. —By means of bacteria which form cellulose it could be shown that freshly formed cellulose does not occur immediately in crystallized form. With *Bacterium xylinoides* it appears first in the form of an electron microscopic structureless film on the surface of the culture fluid. However, this film is not stable, but commences to crystallize into very thin threads. 4. Cellulose fibers.—A recently developed method for careful separation of cellulose fibers by supersonic waves is reported. The longitudinal vibrations which are produced in a liquid by an appropriate sound transmitter split the fibers without transverse breaks into exceedingly fine skeins up to 60 in thickness which are identified with the micellar skeins of Frey-Wysslin.

**Fungi concerned in fiber deterioration, I: Their occurrence.** P. B. Marsh & K. Bollenbacher, USDA. *Textile Research J. 19,* 313-24 (June, 1949).

This is a review of the literature, but certain new findings are presented which relate to the types of fungi which occur on cellulosic textile fibers under various practical exposure conditions. Information is presented which indicates that resistance on the part of the fungus to sunlight is an important factor in determining which fungi grow





on fibers in different types of exposures. Differences among the fungi in moisture requirements and in temperatures favorable for growth are also shown to be important.

**Interpretation of the mechanical behavior of rayon.** L. Hermanne. *Textile Research J. 19,* 61-72 (Feb. 1949).

This discussion of the mechanical behavior of rayon advances a working hypothesis which includes the concept of the micro-Brownian movement of the cellulose chains in the amorphous regions, the thermodynamic point of view, and the equation of state for rayon.

**Measurement of hysteresis and dynamic elastic modulus of textile yarns and cords.** G. Palandri, Pirelli, S. p. a., Milan, Italy. *Rubber Age 64,* 45-52 (Oct. 1948).

A brief review of the few known test methods employed to measure dynamic modulus and hysteresis losses of textile fibers is given. A new test method based on forced resonance oscillation is described, in which cords and yarns stretched by a permanent static load are deformed in tension at frequencies of 20 to 200 cycles/sec., with dynamic tension strain of 0.02 to 0.8% and at temperatures of 20°C to 65°C. Experimental results obtained on cords and equivalent compositions of single yarns are presented and discussed. Hysteresis losses are found to follow the quadratic law versus dynamic tension strain, and the dynamic modulus E is found to be independent of tension strain in the case of continuous or long fibers. With short fiber textiles the dynamic modulus E decreases with increasing dynamic tension strain. The dynamic modulus E is found to be independent of frequency in the examined range above 100 cycles/sec., while the hysteresis losses increase proportionally with the frequency. Comparative data of the hysteresis losses and modulus of textile fibers most commonly used, with reference to their practical application, are presented.

**New method of evaluation of the crystallite orientation of cellulose fibers from x-ray data.** P. C. Tsien, Kung Yih Inst., Shanghai, China. *Textile Research J. 19,* 330-41 (June, 1949).

In connection with the study of dichroic reflection of light from textile fibers, the idea of quantitatively verifying the results of optical measurements by x-ray data is advanced. Based upon the assumption that the number of crystallites included in any definite angular interval is a function of the angle to the fiber axis, a method was

devised by which the intensity of a diffraction spot could be analyzed into its components to give the angular distribution curve of crystallites around the fiber axis.

**Transmittance, reflectance, and absorptance of near infrared radiation in textile materials.** Richard H. Wilhelm, Princeton Univ. & Jas. B. Smith, Textile Research Inst. *Textile Research J. 19,* 73-88 (Feb. 1949).

This paper deals with the measured transmission of infrared energy with a wave length maximum at 9,700 Ångstrom units through layers of textile fabrics.

## TEXTILE EDUCATION AND RESEARCH J

**Chemical periodicals in the dye and textile industries—a statistical analysis.** F. S. Boig & W. J. Fitzpatrick, Jr., Northeastern Univ. *Textile Research J. 19,* 325-39 (June, 1949).

This represents a statistical survey of articles appearing in the literature on dye and textile chemistry. Using the number of abstracts in the Dyes and Textiles Section of *Chem. Abstracts* as a rough measure of importance of a publication, it was found that in 1947 the most important United States publications in the field were the *Textile Research J.* and the *Am. Dyestuff Reptr.* The most important English publications were the *J. Soc. Dyers Colourists* and the *J. Textile Inst.* The more important journals in other countries were: the *Indian Textile J.*, the *Can. Textile J.*, the new Swiss *Textil-Rundschau, Melliand Textilber.* of Germany, and *Teintex* of France. It is concluded that for the current textile literature a knowledge of a foreign language is not essential since 80% is published in the English language.

**Cotton research.** Maurice Goldsmith. *Discovery 10,* 12-16 (Jan. 1949).

The research program of the Brit. Cotton Industry Research Association is discussed.

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